Family Gobiidae

The True Gobies

Body variably short to more or less elongate in form, cylindrical or subcylindrical and laterally compressed, especially posteriorly or tail. Head short to long. Snout variable. Eyes not especially prominent or stalked. Mouth very variable, large or small, vertical to horizontal. Teeth in one to many rows, fixed or depressible, erect or horizontal. simple, pointed, canine like or curved, or ends variably enlarged, bicuspid or tricuspid, in either or both jaws; may be placed on lips in movable band; rarely present on palate. Body usually scaled, with ctenoid or cycloid scales, or both, sometimes

partly and rarely naked; scales vary from 20 to 200 in a lateral series on body, usually more or less irregularly disposed. Dorsals variously thought usually separated, anterior or spinous fin rarely absent of 3 to 9 spines, and posterior rayed fin usually longer, rays varying 5 to 30 with usually 8 to 11. Caudal variable, usually well developed, sometimes elongated. Pectorals well developed. Ventrals usually entirely connected by membrane, rarely divided and then at least basal part of connecting membrane present; fins usually form sucking or vacuum disk, so fish may attach more or less firmly to objects; each fin formed of spine and 4 or 5 rays, variably short, rounded to circular,

edges entire or notched, and basal frenum in front variably thick or thin, and edge variably entire or lobate; fins or dusky may be close or well separated and joined to belly most their extent or entirely free.

A large family including upward of 300 species and perhaps 100 genera, though the latter are mostly unsatisfactorily known and defined. Most of the species are dull colored, though some coral reef forms are with brilliant colors. Most live on the sea bottom, living in coral reefs, tide pools, seeking shelter among rocks and boulders, or in the crevices of sedentary marine animals like sponges, corals, etc. Some small or minute species live in lakes or streams and are fresh water

in their habitat. Most however spawn in the sea and the young may ascend rivers or live in streams until matured. Quite characteristic of the gobies is the extensive series or lines of minute papilla usually on the head, forming definite patterns and of taxonomic value.

Analysis of genera

A.' Ventral sucker not cup-shaped or more or less adherent to belly.

b.' Lower lip without band of movable horizontal teeth, or lips never with 2 bands of teeth.

c.' Dorsal spines 5 or less, or none.

d.' No first dorsal fin.

e.' Head depressed; maxillary embedded below muscles of cheeks. Leuciogobius

e.[2] Head not depressed; maxillary end ensheathed, not embedded below muscles of cheeks. Leucopsarion

d.[2] Dorsal spines 3.

f.' D. III — I, 6 to 8; scales 23 or 24. Luciichthys

f.[2] D. III — 11; scales obscure, very small, embedded. Astrabe

f.[3] D. III — 18; A. 11; scales very small, embedded. Eutaeniichthys

d.[3] Dorsal spines 4 or 5; scales absent, or large when present.

e.' No scales; teeth uniserial.

. h.' Pair of lower post-symphyseal canines. Microgobius

h.² 20 post-symphyseal canines. Hereolus

f.² Scales 25 to 28.

g.' Cheek and opercle covered with large scales. Redigobius

g.² Head naked.

f.' D. I, 10 or 11 Gobiella

f.² D. 13 to 15. Leptogobius

a.³ Dorsal spines 6 or more.

k.' Body scaled.

i.' Teeth all simple.

j.' No barbels.

l.' Conspicuous ridges and flaps of skin on top and sides and underparts of head.

q.' No teeth on vomer. Callogobius

q.² Two or 3 large blunt teeth on vomer.

m.' Scales 60 to 65. Mars

m.² Scales 70 to 85. Smilogobius

n.² No conspicuous ridges and thinny flaps on top and sides of head.

o.' Scales large, ctenoid, not over 38; second dorsal and anal with I, 11.

pr. Preopercle without strong spine at angle directed back.

qt. Caudal not lanceolate or greatly elongate.

~~t. Dorsal spines 6.~~

ru. Tongue rounded, truncate, scarcely emarginate.

sv. Head not deep, subglobose.

tw. Hind preopercle edge not toothed.

ux. Nape without median shinny crest.

vy. Head without high shinny crest.

wz. No weak spine on each inner edge of mandible.

Xaa. Color not yellow, or with several contrasted transverse black bands. B.

ybb. Maxillary not prolonged back behind eye; depth 5 3/4.

cc. Mouth cleft nearly vertical; minute fragile fishes. Gobiosoma

cc. Mouth cleft terminally inferior, ventral small; depth 5 3/4. Vailima

ybb.2 Maxillary prolonged back behind eye. Gobiosoma

z dd.' Snout long as eye. Gobiopsis
z dd.² Snout 2' Sr in eye.
aa dd.' First predorsal scale close behind eye enlarged. Eugnathogobius
aa dd.² First predorsal scale not enlarged. Pseudogobiopsis
Z aa.² Yellow, with several black transverse bands. Brachygobius
W Z.² Weak spine on each inner edge of mandibular ramus. Heteroplopomus
W Y.² Head with high, thin, shiny crest. Cristatogobius
W X.² Nape with shining median crest. Lophogobius
W W.² Hind preopercle edge toothed; first dorsal spine short, stiff, sharp pointed. Oplopomus
S S.² Head very deep, subglobose; body plump; pair of post-symphyseal canines. Ruppellia
vv ff.' Tongue free from floor of mouth. Gobius
vv ff.² Tongue adnate below almost to tip.
cc gg.' Lips thin; snout shorter to subequal with eye.

dd hh.' First predorsal scale not enlarged; D. VI — 11 to 13; A. 11 to 13.
Stenogobius

dd hh.² First predorsal scale enlarged, behind eyes; D. VI — 7 to 9; A. 7 to 9.
Stigmatogobius

cc gg.² Lips very thick; snout well over 2 eye diameters. Awaous

ii.² Tongue well notched in front; lower jaw protrudes. Glossogobius

gg.² Caudal lanceolate, greatly extended; maxillary long, often extended well behind eye. Waitea

ll.² Preopercle with large strong spine directed back. Gladiogobius

o.² Scales smaller, 50 to 100 or more.

ee kk.' Caudal rounded or pointed, not lanceolate, elongate or more than head.

ff jj.' Tongue rounded, truncate, or scarcely emarginate.

gg hh.' Scales 55 to 58; depth 6 4/5 to 7.
Eleotris

gg hh.² Scales 70 to 80. Cryptocentroides

gg hh.³ Scales 85 to 140. Cryptocentrus

ff.ᵉ Tongue well notched in front; scales 70 to 100.

ll.ᵈ Pectoral without free rays; pair of posterior interocular pores. Chaenogobius

ll.ᵉ Upper pectoral rays detached; no interocular pores. Chasmichthys

ll.ᵉ Caudal well elongated, lanceolate, greatly longer than head.

iii.ᵈ Elomer with 2 large flat teeth; scales 50 to 75; D. VI—I, 10. Myersina

iii=ᵉ No vomerine teeth.

jjj.ᵈ Lower teeth erect, biserial or triserial, outer enlarged; scales 58 to 80; D. VII—11 to 15; A. 11 to 16. Paroxyurichthys

jjj.ᵉ Lower teeth erect, biserial, with inner row of stout curved canines; scales 104; D. VI—I, 15; A. I, 16. Biat

jjj=ᵉ Lower teeth erect, without canines, not uniserial. Oxyurichthys

jjj.ᵈ Lower teeth horizontal, uniserial.

kk.ᵈ Lower teeth inclined inward, with pair of post-symphyseal canines; scales 65 to 75; no snout

flap with projection.
Paraprocryptes

bka.² Lower teeth long, blunt, horizontal, without canines; scales 75 to 90; pair of large teat-like flaps hang down over mouth. Apocryptichthys

m.² Dorsal spines 8.

dAA.' Pectoral rays confluent; front edge of ventral sucker fringed. Acanthogobius

dAA.² Upper pectoral rays detached; front edge of ventral sucker entire. Pterogobius

A.² Barbels on chin, or edge of lower jaw, or under side of head, or on all of them.

mmg.' Head depressed.

AA.' D. VI, I, 11, ; head naked.

AA! Scales 39. Pipidonia

AA.² Scales 46. Pogonogobius

AA.² D. VIII, I, 15 or 16; top and sides of head scaly. Lophiogobius

mmg.² Head deeper than broad.

WAA.' Pectoral rays confluent; scales 28 to 65.

gggA.' Barbels 90 on chin and lower jaw. Parachaeturichthys

qq. Lower jaw with 3 pairs of barbels. Chaeturichthys

qqq. 3 Single pairs of barbels at symphysis of mandible. Illana

tt. 2 Upper pectoral rays detached; scales 60; lower jaw with more than 20 barbels. Yagamia

ttt. 2 Teeth more or less bilobed or tricuspid in outermost row.

vv. 1 One row of teeth in each jaw, bilobed and more or less horizontal in lower jaw, with pair of post-symphyseal canines.

ww. 1 Eye in front half of head; D. V or VI, 15 to 23. Gobileptes

www. 2 Eye in first third of head; D. V or VI, 31 or 32. Pseudapocryptes

vv. 2 Two rows of teeth in each jaw, outer row tricuspid.

xx. Sides of head with rows of barbels. Triaenopogon

xxx. 2 No barbels. Tridentiger

bb. 2 Body nearly or entirely naked, dorsal and anal distinct from caudal,

mm ww
###. Teeth all simple; no crest on head.
ww
##. Maxillary moderate not extended beyond eye.
ww
aaa. Body elongate fusiform.
dd
bbb. No scales; D. VI – I, 9. Gillichthys

dd
bbb. 2 Few small scales posteriorly; D. VI 11 or 12. Kellogella
ww 2=
aaa. Body deep, oval, much flattened laterally.
yy
ccc. Mouth cleft small, horizontal; jaws subequal. Gobiodon
yy
ccc. 2 Mouth cleft large, oblique; lower jaw projects. Lubricogobius
ww
##. 2 Maxillary elongate, extends far back behind eye. Schismatogobius
mm
###. 2 Lower teeth tricuspid; an erect crest from snout tip to nape. Ptereleotris
b. 2 Lower lip with row of needle like movable small teeth; head 2 in L.; D. V – 8; A. 8. Pleurosicya
=

A.[2] Ventral sucker cup shaped, either only with bases or wholly joined with belly.

ZZ.' Ventrals form round sucking disks attached to belly.

aaa.' Body with ctenoid scales. Liicydium

aaa.[2] Body naked, or cycloid scales posteriorly. Lentipes

ZZ.[2] Ventrals united, not adherent to belly.

bbb.' Labial teeth in lower lip.

ccc.' Upper teeth close set, more or less tricuspid. Stiphodon

ccc.[2] Upper teeth not tricuspid, uneven, partly caniod. Pleurosicya

bbb.[2] No labiall teeth; scales not deciduous, cycloid.

ddd.' No lower canines.

eee.' Mouth cleft oblique; second dorsal and anal subtriangulate, acute. Leptogobius

eee. Mouth cleft nearly horizontal; second dorsal and anal obtuse. Vicyopus

ddd.[2] Two lower canines; mouth cleft nearly vertical. Gobiopterus

Genus Luciogobius Gill

Luciogobius Gill, Proc. Acad. Nat. Sci. Philadelphia, p. 146, 1859. (Type Luciogobius guttatus Gill, monotypic.)

Gobiopus Gill, Ann. Mag. Nat. Hist. London, ser. 4, vol. 14, p. 160, 1874. (atypic. No description.)

Expedio Snyder, Proc. U. S. Nat. Mus., vol. 36, p. 606, 1909. (Type Expedio parvulus Snyder, orthotypic.)

Inu Snyder, op. cit., p. 607, 1909. (Type Inu koma Snyder, orthotypic.)

Body very elongate, little compressed anteriorly subcylindrical, posteriorly compressed. Head little depressed, or little compressed. Snout subequal with eye. Eyes advanced, in front half of head. Mouth curved, large, lower jaw large or prominent, or jaws subequal. Teeth simple, in several rows or narrow band, outer row enlarged, or outer row of lower jaw extends only to half of jaw, or series may be uniserial. No canines. Tongue bilobate. Cheeks swollen. Bony interorbital width equals eye. Gill opening not continued forward below. Isthmus wide. Inner edge of shoulder girdle without fleshy flaps. Body naked, or covered with small cycloid scales on hind part of tail. First dorsal wanting, second dorsal

with 9 to 13 rays. Anal rays 10 to 12. Caudal rounded. Pectoral with or without a few free silk like upper rays. Ventrals united, very small, under pectorals.

Japan.

Analysis of Species

a.' Snout. Posterior part of body scaly.

b.' Head with conspicuous dermal ridges — loma

b.² Dermal ridges absent — ama

a.² Scales absent.

c.' Luciogobius. Ventral sucker present. — guttatus

c.² Expedio. No ventrals or ventral sucker. — parvulus

Lucciogobius koma (Snyder)

Inu koma Snyder, Proc. U. S. Nat. Mus., vol. 36, p. 607, 1909 (type locality, Misaki, Kanagawa-ken); vol. 42, pl. 60, fig. 2, 1912 (types); — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 362, 1913 (reference).

Lucciogobius guttatus koma Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 52, 1936 (Yokohama; Misaki; Motomura; Uwoda).

Depth 7 1/4; head 3 2/5. Snout 5 in head from snout tip; eye 8, 1 2/3 in snout; maxillary reaches beyond eye space equal to its diameter, length 2 2/5 in head from snout tip; mouth cleft but little inclined from horizontal, lower jaw little protruded in front; band of minute teeth in each jaw, with outer enlarged row; tongue notched in front; interorbital 9, slightly concave, with narrow transverse ridge: gill opening 3 1/8, greater than basal pectoral width.

Head and trunk naked, tail laterally and posteriorly, and caudal peduncle, covered with minute cycloid scales.

D. 11, fin height 2 4/5 in total head length; A. 11, fin height 2 4/5; caudal 1 3/4, convex behind; least depth of caudal peduncle 2 3/4; pectoral 1 7/8, rays 18;

ventral rays $\frac{1}{2}$, $\frac{5}{6}$ fin $\frac{2}{3}$ of
total head length.

Light brown, dotted with darker, and still darker on snout and caudal base). Fins pale, vertical fins and pectoral with small darker spots.

Japan.

U. S. N. M., no. 62955. Misaki, Japan. Albatross Expedition.
Length 39 mm. Type.

Luciogobius ama (Snyder)

Gnu ama Snyder, Proc. U. S. Nat. Mus., vol. 36, p. 607, 1909 (type locality, Misaki, Kanagawa-ken); vol. 42, pl. 60, fig. 3, 1912 (type). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 362, 1913 (reference).

Luciogobius guttatus ama Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 53, 1936 (reference).

depth 5 4/5; head 3 1/3. Snout 4 1/2 in head; eye 9 1/4, 1 4/5 in snout; mouth little inclined from horizontal, begins in front well below level of lower eye edge, extends back half and eye diameter behind eye, length 2 1/2 in head from snout tip, lower jaw well little projecting in front; teeth in bands in jaws, outer row little enlarged and wide set; tongue notched in front; interorbital little greater than snout, 4 in head from snout tip, eye entering upper profile. Gill opening 2 1/2 in head from snout tip.

Head, predorsal, back, breast and belly scaleless. Sides of trunk posteriorly and tail with minute cycloid scales.

D. 9, fin height 2 1/2 in total

head length; A. 10, fin height 2 3/4, caudal 2 1/8, convex behind; least depth of caudal peduncle 2 1/5; pectoral 17 or 18, fin 2 in total head length; ventral 2 3/4, rays I, 5.

Light brown. Head with many close set darker brown spots, also trunk and upper parts of tail. Vertical fins and pectoral with numerous small, close set, dark spots.

Japan.

U. S. N. M., no. 62956. Misaki, in tidepool. Albatross Collection. Length 40 mm. Type.

Luciogobius guttatus Gill

Luciogobius guttatus Gill, Proc. Acad. Nat. Sci. Philadelphia, p. 146, 1859 (copied). (type locality, Shimoda). — Günther, Cat. Fishes Brit. Mus., vol. 3, p. 152, 1861. — Steindachner, Sitzb. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, p. 144, 1879 (Yokohama). — Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 24, p. 123, figs. 29–30, 1901 (Tokyo Bay; Hakodate; Wakanoura; Sande; Nagasaki); Jour. Coll. Sci. Imp. Univ. Japan, vol. 13, p. 115, 1901 (Yokohama). — Franz, Abhandl. Ber. Akad. Wiss. vol. 4, Suppl. Band 1, p. 66, 1910 (Ito; Arigami Bay). — Snyder, Proc. U. S. Nat. Mus., vol. 42, p. 445, 1912 (Mororan, Hakodate, Yame, Aikawa, Iwaki, Shimonoseki, Akame), Tanegashima Jour. Coll. Sci., Tokyo, vol. 33, art. 1, p. 362, fig. 314, 1913 (Tanegashima). — Jordan, Tanaka, Snyder, Journ. College Sci., Tokyo, vol. 33, art. 1, p. 362, fig. 314, 1913 (Tanegashima).

Luciogobius guttatus Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 51, fig. 10, 1936 (Takanosuna; cave of Daikon-jima, Shimane-ken; artesian well Gobo; Mikaki-mura; Etwazima).

Luciogobius elongatus Regan, Ann. Mag. Nat. Hist. London, ser. 7, vol. 15, p. 23, 1905 (type locality, Inland Sea of Japan (elongate example). — Snyder, Jour. Coll. Sci., vol. 42, p. 445, 1912 (Tanegashima).

—Jordan, Tanaka, Snyder, op. cit. (reference):

Depth 6 1/4 to 9 1/5; head 3 7/8 to 4. Snout 4 1/2 to 4 2/3 in head from snout tip; eye 7 2/3 to 8, 1 1/2 to 1 3/4 in snout; mouth but little inclined from horizontal, begins in front level or slightly below level, of lower eye edge, reaches opposite or little behind hind eye edge; lower jaw protruded in front; teeth in narrow bands in jaws, minute, uniform; tongue notched in front; interorbital little concave. eye entering upper profile of head. Gill opening little less than pectoral base depth, length 3 4/5 to 4 in head from snout tip.

No scales or barbels.

D. 13, fin height 3 3/4 to 3 7/8

in total head length; A. 12, fin height 4 to 4 1/5; caudal 1 3/4 to 1 4/5, convex behind; least depth of caudal peduncle 2 2/5 to 3 1/5. Pectoral 1 3/4 to 1 4/5, rays 17 to 19; ventral rays I, 5, fin length 4 to 5 in total head length.

Dull brownish or olive, due to minute dark dots, these more spaced and lighter or disappearing below, to color pales. Upper parts, dorsal and caudal marbled with innumerable small, close set, rounded whitish spots. Caudal with several slightly darker transverse waved bands. Anal pale to whitish. Pectoral brownish, sometimes few small whitish spots above. Ventral pale to whitish.

Japan. Tomiyama has noted important variations,

as the species aside from being
marine has also been sometimes found
in a stream, cave or artesian well.
"The specimens collected from
the shore exhibit variations
in the general form of body,
proportion of head and other
characters. Of the albinos from
the Cave of Daikon-ji-ma have
fewer dorsal and anal rays,
larger head, the eyes degenerated
more or less, and no free
pectoral rays. The specimens
from the artesian well have
the elongate body, fewer dorsal
and anal rays, the eyes
covered by skin, and no free
pectoral rays."

One example. Hame, Japan.
Albatross Expedition 1906. Length
46 mm. (With 71411 U. S. N. M.)

U. S. N. M., no. 49906. Hakodate, Japan. D. S. Jordan and J. O. Snyder. Length 58 to 78 mm. Three examples.

U. S. N. M., no. 49935. Wakanoura, Kii, Japan. D. S. Jordan and J. O. Snyder. Length 33 mm.

U. S. N. M., no. 71389. Aikawa, Rikuzen, Japan. Albatross Expedition 1906. Length 49 to 59 mm. Three examples.

U. S. N. M., no. 71432. Misaki, Sagami, Japan. Albatross Expedition 1906. Length 27 to 51 mm. Seventeen examples.

U. S. N. M., no. 71477. Yame, Japan. Albatross Expedition 1906. Length 40 to 62 mm. Twelve examples.

U. S. N. M., no. 71476. Tanegashima Island, Japan. Albatross Expedition 1906. Length 27 to 53 mm. Fifteen examples.

U. S. N. M., no. 71478. Tanegashima Island, Japan. Albatross Expedition 1906. Length 25 to 42 mm. Six examples. As Luciogobius elongatus.

U. S. N. M., no. ——. Iwasaki, Japan. Albatross Expedition 1906. Length 39 mm. (With U. S. N. M., no. 70754.)

U. S. N. M., no. 71499. Shimonoseki Japan. Albatross Collection 1906. Length 31 to 50 mm. Nine examples.

U. S. N. M., no. 71502. Mororan, Japan. Albatross Collection 1906. Length 70 mm. July 6, 1906.

U. S. N. M., no. 105247. Jehol, Peter the Great Bay. A. K. Iaranetz. Length 49 to 54 mm. Two examples. August 24, 1928.

Lucigobius parvulus (Snyder)

Expedio parvulus Snyder, Proc. U. S. Nat. Mus., vol. 36, p. 607, 1909 (type locality, Misaki, Kanagawa-ken); vol. 42, p. 445, pl. 61, fig. 1, 1912 (types). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 363, 1913 (reference).

Lucigobius guttatus parvulus Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 51, 1936 (Yokohama, Fukui-ken; Misaki, Kanagawa-ken).

Differs from Lucigobius guttatus in the absence of the ventral humber, though in agreement in the absence of scales. Length 45 mm.

Depth 10 1/5; head 5 1/4. Snout 3 1/2 in head from snout tip; eye 8, 2 2/3 in snout; ~~mouth~~ maxillary reaches 1/2 in eye, length 2 1/4 in head from snout tip; mouth cleft little inclined, begins in front slightly below level of lower eye edges, lower jaw projecting in front; teeth in narrow band in upper jaw, outer row enlarged, and lower teeth uniserial; tongue notched in front; interorbital concave, eye entering upper profile of head. Gill opening wide as pectoral basal width, length 2 3/4 in total head length.

Head and body naked.

D. 10, fin height 4 in total head length; A. 11, fin height 4; caudal 1 3/5, convex behind; least depth of caudal peduncle 2; pectoral 2 1/2, rays 14. ventral ~~rays~~ Vent nearly midway between

pectoral and caudal bases).

Color dull yellowish or brownish, with very numerous close set small dark spots or specks, mostly on upper surfaces.

Japan. Known by the absence of the ventral fins.

U. S. N. M., no. 62954. Iwisaki, Japan. Albatross Collection. Length 37 mm. Type.

Genus Leucopsarion Hilgendorf

Leucopsarion Hilgendorf, Monatsb. Akad. Wiss. Berlin, p. 339, 1880. (Type Leucopsarion petersii Hilgendorf, monotypic.)

Body very elongate, little compressed. Head little depressed. Snout subequal with eye. Eyes advanced, in front half of head. Mouth oblique. Teeth in several rows, outer enlarged, no canines. Tongue notched. Cheeks swollen. Body interorbital equals eye. Gill openings extend forward below. Isthmus narrow. Inner edge of shoulder girdle without fleshy flaps. Body naked, transparent. Head naked. First dorsal absent. Second dorsal with 12 or 13 rays. Anal longer than second dorsal, its origin before second dorsal origin. Caudal rounded. Pectoral without free silk like rays. Ventrals united, very small.

Leucopsarion petersii Hilgendorf

Leucopsarion petersii Hilgendorf, Monatsb. Akad. Wiss. Berlin, p. 340, fig., 1880 (type locality, "südliche Japan; Nordinsel Yeso).

Leucopsarion petersi Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 24, p. 115, ~~1901~~ fig. 31, 1901 (Niigata; Hiroshima); Taniyama, Jap. Journ. Zool., vol. 7, no. 1, p. 54, 1936 (Aomori to Kagoshima).

[Annot. Zool. Japan., vol. 3, p. 115, 1901 (streams S. Japan) — Jordan, Tanaka, Snyder, Journ. College Sci., Tokyo, vol. 33, (art. 1, p. 363, fig. 319, 1913 (reference).

Depth 7 1/2 to 7 2/3; head 4 4/5 to 5 1/4, width 1 4/5. Snout 3 1/2 to 4 in head from snout tip; eye 4 to 4 3/4, 1 1/8 to 1 1/2 in snout; subequal with interorbital; maxillary reaches 1/2 to 2/3 in eye, length 2 to 2 3/5 in head from snout tip; mouth cleft rather large, oblique, begins on level with middle of eye, lower jaw little protruded; teeth uniformly uniserial in jaws, conic, slightly recurved; interorbital low, eye not entering upper profile.

Head and body naked.

D. 13 or 14, fin height 2 to 2 1/5 in total head length; A. 17 or 18, fin height 2; caudal 1 1/2, truncate or slightly emarginate behind; least depth of caudal peduncle 2 1/5 to 2 3/4; pectoral 1 1/8 to 1 2/5, rays 14 or 15;

ventral rays I, 5, length 3 to 4
2/3 in total length of head.

In life translucent, in alcohol becoming whitish. Dark dots on lips, occiput, interorbital, opercles and on tail along anal base.

Japan.

U. S. N. M., no. 49965. Echigo, near Niigata, Japan. D. S. Jordan and J. O. Snyder. Length 39 to 43 mm. Four examples.

Genus Mastichthys H. M. Smith

Science, new ser., vol. 15, p. 30, Jan 3, 1902;

Mastichthys H. M. Smith, Bull. Bur. Fisher., vol. 21, p. 167, 1901 (Oct. 4, 1902). (Type Mastichthys luzonensis H. M. Smith, monotypic.)

Body nearly transparent, elongate, compressed. Snout 2/3 of eye. Eyes large, advanced or in front half of head. Mouth oblique, lower jaw prominent. Teeth uniserial in each jaw. Interorbital 1/2 diameter of eye. Scales 23 or 24 in axial lateral series, ctenoid. Dorsal fins separate, first with 3 weak spines and a rudiment adnate to first spine, fin very low, second fin with 7 to 9 rays. Anal rays 9 to 11. Caudal pointed, 5/6 of head. Pectoral without free silk like rays. Ventrals united, short.

Philippines. Minute gobies from Lake Buhi.

Mistichthys luzonensis H. M. Smith

Mistichthys luzonensis H. M. Smith, Science, new ser., vol. 15, p. 30, Jan. 3, 1902 (type locality, Lake Buhi, Philippines Islands); Bull. U. S. Fish Comm., vol. 21, p. 167, fig. 1, 1901 (1902). — Jordan and Richardson, Philippine Journ. Sci., p. 48, 1910 (reference). — Herre, Gobies of Philippines, p. 95, pl. 7, fig. 1, 1927. (Lake Buhi). — Royas and Martin, Depart. Agric. Comm. Manila, Tech. Bull. 6, p. 235, 1937 (reference).

Depth 3 9/10 to 4 2/3; head 3 1/5 to 3 1/3. Snout 5 to 5 1/2 in head from snout tip; eye 3 1/4 to 3 2/3, greater than snout, 1 3/4 to 2 in interorbital; maxillary reaches 1/4 to 1/3 in eye, length 2 1/2 to 2 2/3 in head from snout tip; mouth large, begins in front about level with upper pupil edge, mandible projecting, teeth short, uniserial, numerous in jaws; interorbital low, eye not quite entering upper profile.

Scales 23 or 24 in lateral series; 6 transversely between second dorsal and anal. Scales deciduous, only on trunk and tail, on predorsal posteriorly, prepectoral and breast, head entirely naked.

Fl. III — I, 6 to 8, second spine 5 1/5 to 8 2/3 in total head length, first branched

ray 2 1/3 to 2 2/3; A. I, 9 or 10, first branched ray 2 7/8 to 3, caudal 1 1/4 to 1 1/10, convex behind. least depth of caudal peduncle 2 1/4 to 2 2/5; pectoral 1 3/7 to 1 1/2, rays 15; ventral rays I, 5, fin 2 2/3 to 2 4/5 in total head length. Anal papilla of male 2 1/2 in total head length, of female 5 1/2 more robust and less pointed.

In alcohol whitish, transparent in life. Back and head with some dark dots above. Snout or muzzle dusky with dark dots. Dark bar down from lower eye edge close behind hind end of maxillary.

Philippines. Herre has the following interesting items:

"This fish is probably next to the smallest known vertebrate, having an average length of 12.5

millimeters, the males somewhat smaller than the females, averaging shorter and slenderer).

Of it is a little larger than Pandaka pygmaea H.s. nov.; there are several other species of fish nearly as short, notably of the genus Eviota; but all of them, as far as I am aware, are bulkier. Males are sometimes mature when under 10 millimeters in length, their maximum size being 13.5 millimeters. Occasionally one finds ripe females a little over 11 millimeters long, while the largest I have examined are only 14 millimeters in length.

"This tiny goby occurs in vast numbers in the lake, from near the shore line out to where the water is at least

10 or 12 meters deep, and it breeds throughout the year. According to the inhabitants of Buhi, the eggs float at the surface of the lake; covering large areas, especially during sunny days in March and April. Specimens collected by me in the latter part of September, and by Mr. Alejo G. Arce in January, were breeding. When hatched the young swim at first at the surface, but after a short time go to the bottom to live.

"I believe that sinarapan rise to the surface with the diurnal movement of the plankton on which they feed. The unusual method used to capture them is based on this habit and provides a roosting place on which they gather in swarms.

From time immemorial they have been caught in large quantities by the people living about the lake and are regarded by them as a staple article of diet of superior delicacy. The right to catch them is let by the municipality to the highest bidder, who then has the exclusive fishing privilege for such part of the lake that he has leased.

"A full-grown bamboo stalk, 10 meters or more in length, is cut, the butt sharpened, the branches removed except the 3 or 4 innermost twigs, and a palm leaf wrapped around the topmost meter or two. The contrivance, called abung, is then set firmly into the lake bottom where the water is deep enough to leave a little of the tip and a spur

of the palm leaf protruding above the surface so the fisherman can find it easily. During the day the sinarapan come to rest up on the palm leaf. About the middle of the afternoon the fisherman goes out to the abung which he has scattered about in his leasehold and begins to fish with a triangular net, or sarap, made of sinamay, a kind of cloth made of Jabacá fibers. The sarap is mounted on a Y-frame bamboo-and with it the abung is swept from the bottom of the palm leaf to the top, and usually from a half liter to liter of sinarapan are caught on each. The fish are dumped into a large basket from which the water drains at once, leaving

what appears to be a mass of some strange wriggling, shifting, transparent, insect larvae, in which the large black eyes are the only conspicuous part.

"The sinarapan cannot be caught along shore, though they can readily be seen there, because in the shallow water they are protected by the dense masses of Potamogeton, water hyacinth, algae, and other plants amid which they dwell, and where a net cannot be used.

"Mingled with the sinarapan and feeding upon them are larger fishes of various kinds, so that occasionally sels, Lentog (Hemiramphus cantog F. M. Luis), and several kinds of larger gobies are caught when the fisherman sweeps his net over an abung.

"Sinarapan are fried in oil, or boiled with begetables, and have a delicious flavor. When more are caught than the local market demands the surplus is salted or dried in cakes and exported to the neighboring towns in Camarines Sur and Albay Provinces.

U. S. F. H. M., no. 50303. Lake Buhi, Luzon, Philippines. July 5, 1901. Dr. F. W. Richardson. Length.

U. S. F. H. M., no. 50304. Lake Buhi, Luzon. July 5, 1901. Dr. F. W. Richardson.

Genus Astrabe Jordan and Snyder

Astrabe Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 24, p. 119, 1901. (Type Astrabe lactisella Jordan and Snyder, monotypic.)

Clariger Jordan and Snyder, op. cit., p. 120. (Type Clariger communis Jordan and Snyder, monotypic.)

Analysis of Subspecies

a.' Body scaly behind pectoral base.

b.' Broad white saddle on nape. lacticella

b.² Longitudinal series of lighter spots from upper end of gill opening to upper part of caudal base. exilis

a.² Scales on caudal peduncle extend forward in single rows to below spinous dorsal origin at most; distinct dark longitudinal band on side of body. communis

a.³ Scales absent.

c.' Three pairs of papillae on snout and tip of chin. papillosus

c.² No papillae on snout, 1 pair of papillae on tip of chin. kirkhamensis

Body very elongate, little compressed. Head depressed. Eyes advanced in head, subequal with snout. Jaws subequal. Teeth in jaws simple, in several rows, outer row enlarged and in lower jaw only in anterior half, none canines. Tongue bilobate. Some short barbels under eye. Bony interorbital equals eyes. Gill openings not extended forward below, isthmus broad. Inner edge of shoulder-girdle with or without 2 papillae like elevations. Body largely naked anteriorly, posteriorly with small, imbedded cycloid scales, mostly on tail but may extend forward far as pectoral fin. Head naked, may have wrinkled or folded skin. Dorsal fins separate, first with 3 spines, second with 11 or

12 rays. Anal with 10 rays. Caudal rounded. Pectoral with or without some of upper rays free. Ventrals united, short, below pectoral..

Apparently a single widely variable species, grouped recently as five subspecies by Tanigama: ~~as set forth below.~~

Astrabe lactisella Jordan and Snyder

Astrabe lactisella Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 24, p. 119, fig. 26, 1901 (type locality, Misaki, Japan). — Snyder, Proc. U. S. Nat. Mus., vol. 42, p. 444, Aug. 30, 1912 (Misaki; Tanegashima). — Jordan, Tanaka, Snyder, Journ. College Sci. Imp. Univ., vol. 33, art. 1, p. 360, fig. 316, 1913. Astrabe lactisella lactisella Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 53, 1936 (Kanahama; Kominato; Misaki).

Depth 4 1/2; head 3, width equals body depth. Snout 4 in head, broadly rounded as viewed from above; eye 8 1/2, 1 3/4 in snout; maxillary reaches opposite hind eye edge, length 2 2/5 in head; front of mouth begins below level of eye; and lower jaw slightly protruded in front; teeth in jaws simple, even, none canines; nostrils with elevated rims; interorbital 3 in head. Gill opening lateral, not extended forward.

Anterior half of body naked, and posteriorly small, thin, embedded scales and laterally extend forward well towards pectoral base. Row of papillae close below eye and horizontal along infraorbitals; vertical row along front part of opercle.

D. III – 11, second spine 2 4/5 in total head length, fifth ray 2; A. 10, fifth ray 2 3/4; caudal 1 1/4, convex behind; least depth of caudal peduncle 2 1/3; pectoral 1 2/5, rays 24; ventral rays I, 5, fin 1 4/5 in total head length.

Largely black, with broad white contrasted band over predorsal and down below to embrace opercle and basal third of pectoral, & belly behind ventral where narrow. White saddle at interdorsal, another at and before anal origin. Several white spots on hind part of tail and caudal peduncle. Side of head anteriorly, as muzzle and cheek with mutall white spots. Chest and breast white. Second dorsal, pectoral and caudal with white spots. Ventral with white margin.

Japan. A very handsomely contrasted little fish, reaching a maximum length of 55 mm. It is marine in habitat, and found in rock pools.

U. S. N. M., no. 71404. Tanegashima Island, Japan. Albatross Expedition 1906. Length 45 mm.

U. S. N. M., no. 71533. Misaki, Sagami, Japan. Albatross Expedition 1906. Length 32 to 49 mm. Four examples.

Astrabe exilis (Snyder)

Clariger exilis Snyder, Proc. U. S. Nat. Mus., vol. 40, p. 544, 1911 (type locality, Tanegasima); vol. 42, p. 444, pl. 60, fig. 1, 1912 (types). — Jordan, Tanaka, Snyder, Annot. Zool. Japon., vol. 33, art. 1, p. 361, 1963 (reference). — Ebina, Journ. Imp. Fisher. Inst., vol. 30, no. 3, fig. 5, Dec. 1934. Tokyo,

Astrabe lacticella exilis Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 53, 1936 (Hitsabi).

Depth 8 1/2; head 4, snout 5 in head in profile from snout tip; eye 10, 2 in snout; maxillary inclined, extends back nearly opposite hind eye edge, length 3 in head from snout tip; mouth begins little below level of lower eye edge, lower jaw little protruded in front; tongue deeply notched in front; bands of teeth in jaws, narrow, above outer and inner row enlarged, below inner row gradually enlarged to last on each side which little separated; interorbital space 3 1/2 in head from snout tip, flat: Gill opening lateral.

Head and most of body anteriorly naked, or scales few. middle of sides extend forward × opposite spinous dorsal. Row of several fleshy barbels under eye. Pair of short,

broad, fleshy flaps at symphysis of mandible.

D. III – 11, first spine 5 1/5 in total head length, fifth ray 2 1/6; A. 11, fifth ray 2; caudal 1 1/5, convex behind; least depth of caudal peduncle 2 1/2; pectoral 1 2/5, rays 18; ventral rays I, 5, fin length 3 3/4.

Broad light brown band nearly covers entire side of body. Last with many variable, ill-all pale or white spots. Head and muzzle above whitish, also under surface of head, chest, breast and belly. Above caudal base marginally, also below, white blotch. Caudal medially and pectoral basally with blackish.

Japan, marine.

Extracted exhibit 627

U. S. N. M., no. 74583. Tanegashima Island, Japan. Albatross Collection. Length 21 to 34 mm. Six examples. "Cotypes" [= paratypes] of Clariger exilis Snyder.

U. S. N. M., no. 68242. Tanegashima, Japan. Albatross Collection 1906. Length 32 mm. Type.

Astrabe cosmurus Jordan and Snyder

Clariger cosmurus Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 24, p. 121, fig. 27, 1901 (type locality, Misaki, Japan). — Snyder, Proc. U. S. Nat. Mus., vol. 42, p. 444, 1912 (Hakodate; Aikawa; Misaki). — Jordan, Tanaka, Snyder, Annot. Zool. Japon., vol. 33, art. 1, p. 361, fig. 317, 1913 (reference). — Ebina, Journ. Imp. Fisher. Inst., Tokyo, vol. 30, no. 3, fig. 4 (head), Dec. 1934.

Astrabe lacticella cosmurus Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 54, 1936 (Misaki; Motomura).

(— Nakamoto, Journ. Imp. Fisher. Inst., Tokyo, vol. 27, no. 1, p. 9, March 1932 (Hiratsuka; Kominato).

Depth 7 3/5; head 3 2/3. Snout 5 1/3 in head measured from snout tip in profile; eye 8 1/2, 1 1/2 in. snout; maxillary reaches opposite hind eye edge; length 3 in head from snout tip; mouth begin slightly below level of eye, lower jaw little protruded in front; tongue notched in front; bands of teeth in jaws narrow, lower with small lateral canine each side; interorbital low, less than orbit. Gill opening lateral, but little more than width of pectoral base.

Head and body largely naked. Median lateral row of round, cycloid scales along side of caudal peduncle. Row of papillae along infraorbitals, below eye.

D. III—12, first spine 3 in total head length, fifth ray 3 1/4; A. 12, fifth ray 3 4/5; caudal 12,

convex behind; least depth of caudal peduncle 3; pectoral I, 14/15, ray x 18; ventral rays I, 5; fin length 2 3/4 in total length.

White. Broad dark brown lateral band, its edges variable, from end of snout to caudal base. At caudal basally white invades dark lateral band from upper and lower rudimentary caudal rays. Leave only narrow median dark stripe which expands out on caudal base behind, broken at spots and back on hind part of fin. Pectoral base dark. Short transverse dark bar at end of maxillary.

Japan. Reaches 70 mm.

U. S. N. M., no. 71392. Misaki, Sagami, Japan. Albatross Expedition 1906. Length 17 to 30 mm. Fourteen examples. As Clariger communis).

U. S. N. M., no. 71430. Aikawa, Japan. Albatross Collection. Length 28 to 39 mm). Sixteen examples. As Clariger communis.

Astrabe papillosus (Ebina)

Clariger papillosus Ebina, Journ. Imp. Fisher. Inst., Tokyo, ~~Kenkyû Hôkoku~~, vol. 30, p. ~~27~~ 214, fig. 3; 1934 (type locality, Kominato).

Astrabe lacticella papillosus Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 34, 1936 (Misaki; Motomura).

depth 6 1/5; head 3 4/5, width 1 2/3. Snout 4 7/8 in head from snout tip; eye 8 1/4, 1 2/3 in snout, 1 1/4 in interorbital; maxillary well inclined, reaches 3/4 in eye, length 3 in head from snout tip; mouth beginning little below level of eye, lower jaw slightly protruded in front; teeth very small, in narrow band in both jaws; interorbital low. Gill opening lateral, little broader than pectoral base.

Head and body entirely naked. Five fleshy papillous barbels below eye, large one before eye, and pair of broad barbels at snout. Nasal canal tubular, its posterior pore very near eye. Pair of barbels at symphysis of mandible.

D. III 1/13, first spine 3 1/2 in total head length, second ray

2 4/5; D. 1/2, second ray 2 3/7; caudal 1 3/5; caudal behind; least depth of caudal peduncle 2 3/5; pectoral 1 4/7, rays 17; ventral rays I, 5; fin 3 1/4 in total head length.

Body gray, back and pectoral with dusky. Chin and caudal fin mottled with small irregular white spots, abdomen with black spots.

Length 35 mm. (Ebina).

Japan. Only known from the type, obtained in a gravelly tide-pool.

Astrabe sirahamaensis (Yabsamoto)

Clariger sirahamaensis Yabsamoto, Journ. Imp. Fisher. Inst., vol. 27, no. 1, p. 9, fig. 1, March 1932 (type locality, Sirahama, Tiba-ken); Ebina, Journ. Imp. Fisher. Inst., Tokyo, vol. 30, no. 3, fig. 3, Dec. 1934. (Read)

Astrabe lacticella sirahamaensis Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 54, 1936 (type).

Depth 7 1/8; head 3 2/3, snout 4 in head from snout tip; eye 6 3/4, 1 2/3 in snout; maxillary reaches back 1/2 in eye, length 2 2/3 in head from snout tip; mouth begin little below level of lower eye edge, lower jaw protruding in front; tongue deeply notched in front; broad; teeth very small, arranged in narrow bands in both jaws; interorbital flat, more than twice eye. Gill opening lateral, broader than pectoral base.

Head and body entirely naked. Pair of short flattened barbels before eye, near snout tip, and also pair at symphysis of mandible.

D. III — 9, first spine 5 in total head length, second ray 2 3/5; A. 9, second ray 2 4/5; caudal 1 2/5, convex behind; least depth of caudal peduncle 2 1/4; pectoral 1 3/4, rays 19; ventral rays I, 5, fin 3 1/3 in total head length.

Body and fins, except pectoral, dark gray. Pectoral white, except base, and mottled with irregular small black spots. Second dorsal, anal and caudal edged white. Rt upper and lower caudal edges, near base, small round white spots, also. few small ones on body. Occiput with pair of small white spots, widely separated.

Length 33 mm. (Sakamoto.)

Japan. Only known from the type, described above, a female.

Genus Eutaeniichthys Jordan and Snyder

Eutaeniichthys Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 24, p. 122, 1901. (~~type unrecognizable~~ Type Eutaeniichthys gilli Jordan and Snyder, monotypic.)

Body elongate, compressed. Head short. Mouth small, oblique. Teeth simple, in both jaws in 2 or 3 rows, no canines. No barbels. Interorbital space narrow. Inner edge of shoulder girdle without fleshy flaps. Body covered with rudimentary, embedded, rather small cycloid scales. First dorsal with 3 spines, second dorsal with 17 or 18 rays. Anal rays 12. Dorsal much longer than anal, begins before latter.

Caudal pointed. Pectoral without free silk-like rays. Ventrals well developed.

Eutaeniichthys gilli Jordan and Snyder

Eutaeniichthys gilli Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 24, f. 122, fig. 28, 1901 (type locality, Tone River near Tokyo, Japan). — Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 54, 1936 (Haneda; Zyunityo-gata; Kusigahama).

Depth 10 1/2; head 6. Snout 7/5 in head, blunt; eye 5; greater than snout or interorbital; maxillary reaches 1/2 in eye; length of 4 7/5 in head; mouth small, but little inclined, begins in front well below level of eye; teeth in 2 or 3 rows in jaws, uniform; interorbital space narrow, low, upper part of eye touches upper profile line. Gill opening greater

than pectoral base, its length 2 1/5 in head, occupies only last fourth in head length.

Head scaleless. Trunk and tail with small, rounded, cycloid, scattered scales, apparently little evident or absent on abdomen below.

~~Dorsal~~ well separated, D. III - 18, second spine 3 1/3 in head, second ray 3, seventeenth ray 2; A. II, origin below base of eighth dorsal ray, first ray 3 1/2 in total head length, sixth ray 2; caudal 5 7/8 in rest of fish, least depth of caudal peduncle 3 in head; pectoral 1 1/4, rays 17; ventral 1 1/5.

In alcohol pale brownish, whitish below. Broad lateral band made up of brown to dark brown dots, whole length of fish and reflected out on caudal

medially. Scattered dark dots all along median dorsal area. Iris, other than noted, all pale.

Japan.

U. S. N. M., no. 49921. Tone River, near Tokyo, Japan. Dr. K. Kishinouye. Length 36 mm. "Cotype" [= paratype].

Genus Mirogobius Herre

Mirogobius Herre, Gobies of Philippines, p. 91, 1927. (Type Mirogobius stellatus Herre, orthotypic.)

Body elongate, compressed. Head partly cylindrical. Snout long as eye. Eyes anterior, in front half of head. Mouth large, very oblique, lower jaw prominent. Teeth in single row, long, stout, widely spaced, curved. Lower jaw with pair of postsymphysial canines, sometimes only developed in males. Tongue notched. Body naked, or with a few cycloid scales on caudal peduncle. Dorsal fins separate, first with 4 or 5 spines (6 in figure), second with 8 rays. Anal with 9 to 11 rays. Caudal rounded. Ventrals small.

Interorbital width equals eye.

Analysis of Species

a¹ Anal I, 10; pair of canines in lower jaw behind symphysis; color darkened by many black stellate spots. stellatus

a² Anal I, 8 or 9; lower canine behind symphysis in males only; females with minutest teeth, large in males; color yellowish white. lacustris

Inirogobius stellatus Herre

Inirogobius stellatus Herre, Gobies of Philippines, p. 92, pl. 6, fig. 4, 1927 (type locality, small mountain lake beside the sitio Lanigay, Polanqui municipality, Albay Province). — Rojas and Martin, Dep. Agric. Comm. Manila, Techn. Bull. 6, p. 237, 1937 (reference).

Depth 4 1/3 to 5 1/4; head 3 1/5 to 3 4/5, width 1 1/2. Snout 3 4/5 to 3 7/8 in head from snout tip; eye 3 4/5 to 3 7/8, subequal with snout or interorbital; maxillary reaches to or 1/2 in eye; length 2 in head from snout tip; mouth subvertical, begins in front opposite or slightly below level of lower edge of eye, lower jaw but slightly protruded; interorbital

low, eye entering upper profile of head.

Body naked, covered with tough skin, often lined to simulate presence of scales, and under a lens none revealed except in largest males 2 to several tiny cycloid scales at caudal base or on caudal peduncle.

D. IV or V — I,7, spines very slender and second 2 1/3 in total head length, third branched ray 2 1/10; A. I,10, ninth ray 2 1/5; C caudal 1 2/5, convex behind; least depth of caudal peduncle 2 4/5; pectoral 1 1/2, rays 19; ventral rays I,5, fin 2 3/4 in total head length. Anal papilla short and thick in female, long and pointed in male.

In alcohol yellowish to whitish, more or less thickly spattered over sides and dorsally with small black stellate or dendritic

spots, with clear linear space extending longitudinally from pectoral axil to caudal medially. Top of head, snout, and cheeks more or less blackish or black marbled or spotted. Lips black. Some specimens not otherwise different nearly white, with black spots on head and body reduced to fine specks. First dorsal finely speckled with dusky or may be entirely colorless. Other fins, except colorless ventrals, more or less thickly dotted with fine black specks.

Length 12 to 21 mm. (Herre.)

Philippines. "This species reaches maturity when about 15 millimeters long, females of that length having the abdomen enormously distended with eggs ready to spawn. Unlike most of

the other minute Philippine
gobies, this species is firm and
tough, its flesh not readily
breakable, and it endured
much handling without harm.

Inirogobius lacustris Herre

Inirogobius lacustris Herre), Gobies of Philippines, p. 93, 1927 (type locality, Laguna de Bay near Calamba, Los Baños, Lumbang, Santa Cruz); Fishes Herre 1931. Philippine Exped., p. 81, 1934 (Laguna de Bay);— Rojas and Martin, Manila, Techn. Depart. Agric. Comm. Bull. 6, p. 237, 1937 (reference).

Fish. Herre Philippine Exped. 1931, p. 81 (1934) (Laguna de Bay)!

Depth 4 2/5 to 4 4/5; head 3 4/5, wider than body. Snout very wide and blunt in males, narrower but equally blunt in females, subequal with eye, length 4 1/10 to 4 3/5 in head; eye elevated; maxillary reaches below front or anterior part of eye; mouth well oblique, with prominent projecting lower jaw; in males

teeth long, stout, curved, wide spaced, lower all visible when mouth closes; pair of canines behind symphysis of lower jaw, back of outer row of teeth; teeth in females minute, uniserial, without pair of inner lower canines, none visible when mouth closes; interorbital convex, greater than eye diameter.

Skin naked, with fine longitudinal striae).

D. V (rarely IV) — I, 7, first and second spines longest, slender, fifth much shorter, fin reaching half way to second dorsal; front dorsal rays twice as stout as first dorsal spines, highest posteriorly except last, which very short; A. I, 9 or 8, like second dorsal, angulate posteriorly, falling far short of caudal when depressed; caudal subtruncate, shorter

than head; pectoral pointed, subequal to or little shorter than head; narrow ventrals very short, basal portion subtubulate, 2 2/3 in head, reach much less than half way to anal papilla. Last very short and thick in females, thread like and pointed in males.

In alcohol yellowish white or rich cream. Eye silvery black to steel gray. Most specimens with a few black specks on snout and chin. Some with specks scattered over back of head and row along anal base. Fins colorless, caudal with indications of crossbars due to rows of minute specks.

Length 15 to 19 mm. (Herre.)

Philippines. "Caught in large quantities in Laguna de Bay

. . . and in fact all around the lake shore during the rainy season. At other times the shrimp fishermen catch the fish in limited quantities, mixed with the common lake shrimp. It is probable that they live on or near the bottom in the deeper parts of the lake, and are only seen in large schools when they come to shoal water along shore in the rainy season.

"They are fried in cocoa, cooked with vinegar, made into sinagong, or stew, and pickled, and are a greatly esteemed delicacy. At times they occur in the Manila market."

Genus Herreolus H. M. Smith

Herreolus H. M. Smith, Journ. Siam Soc. Nat. Hist. Suppl., vol. 8, No. 3, p. 190, Sep. 7, 1931. (Type Herrea formosa H. M. Smith, virtually, as Herreolus proposed to replace Herrea).

Herrea (not Whitley 1930) H. M. Smith, Proc. U. S. Nat. Mus., vol. 79, art. 7, p. 40, 1931. (Type Herrea formosa H. M. Smith, monotypic.)

Herreichthys Koumans, Preliminary Rev. Gobioid Fishes, p. 163, Nov. 13, 1931. (Type Herrea formosa H. M. Smith, virtually, as Herreichthys proposed to replace Herrea.)

Body elongate, compressed. Head blunt. Mouth vertical. Teeth in each jaw curved, in a single wide-spaced row and front teeth in lower jaw elongated. Dorsal fins widely separated, first dorsal with 5 spines, and second dorsal and anal with 12 branched rays. Caudal rounded. Ventrals narrow, pointed, not adnate to abdomen.

Minute gobies resembling Microgobius in their scaleless body and uniserial teeth in both jaws. Microgobius differs in the presence of fostsymphysial lower canine teeth and only 7 to 9 branched anal rays in the second dorsal, besides a reduced number of anal rays.

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Herreolus formosus (K. M. Smith)

Herrea formosa K. M. Smith, Proc. U. S. Nat. Mus., vol. 79, art. 7, p. 40, 1931 (type locality, Tuben in a rocky tide-pool on Koh Chula (Kite Island), off mouth of Chantaburi River, Gulf of Siam).

Herreolus formosus Suvatti; Index Fish. Siam, p. 157, 1936 (reference).

Depth 6, body slender, dorsal profile nearly horizontal; head 4 1/2. Snout blunt, half of eye; eye more than 3 in head, greater than interorbital space; mouth vertical; single row of curved, well spaced teeth in each jaw, and anterior lower teeth longer.

No scales on head or body.

D. IV — I, 12, interdorsal space 1 1/2 times length of first dorsal base, spines weak and third longest; second dorsal origin in advance of anal, longest rays equal postorbital part of head, fin base 3 1/2 times that of first dorsal, last ray reaching caudal; A. I, 12, like second dorsal; caudal rounded, short, median rays 1 1/2 in head; depth of caudal peduncle 1 1/2 in its length; pectoral broad, bluntly pointed, reaches vertical from last dorsal spine, ventrals equal

postorbital part of head.

Nearly uniform pale olive yellow. Narrow black median dorsal stripe from snout tip to caudal base, extending on caudal and spreading so as to involve upper rays. Broad black lateral band from mouth through lower half of eye to caudal base and then nearly to hind edge of caudal. Lateral band involved lower jaw, and on hind half of body below horizontal axis. Fins pale yellow.

(Smith.)
H. M.

Siam.

U. S. N. Mus., no. 90324. Koh Chula (Kite Island), off mouth of Chantaburi River, Gulf of Siam. March 17, 1930. Dr. H. M. Smith. Length 23 mm. Type.

Herreolus formosus H. M. Smith

Herreolus formosus H. M. Smith.

— Awatti, Index Fish. Siam, p. 157, 1936 (reference).

Genus Redigobius Herre

Redigobius Herre, Gobies of Philippines, p. 98, 1927. (Type Gobius sternbergi H. M. Smith, monotypic.)

Body elongate, compressed. Snout less than eye. Eyes advanced, in front half of head. Mouth small, nearly horizontal. Upper teeth in 3 rows, outer enlarged, in lower jaw band of teeth, some larger than others and canine like. Interorbital 1/2 eye diameter. Scales 25 or 26 in axial lateral series, anteriorly cycloid, posteriorly ctenoid. Head scaled above behind eyes, large and cycloid

on preopercle and opercle. dorsal fins separated, first fin with 5 spines, second fin with 8 rays. Anal rays 8. Caudal oblong. Ventral long.

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Rediogobius sternbergi (H. M. Smith)

Gobius sternbergi H. M. Smith, Bull. U. S. Fish Comm., vol. 21, p. 169, fig., 1901 (type locality, Lake Buhi, Luzon). Seale and Bean, Proc. U. S. Nat. Mus., vol. 33, p. 248, 1907 (Zamboanga). Gnatholepis sternbergi H. M. Smith, op. cit., p. 166 (Philippines).

— Jordan and Richardson, Philippine Journ. Sci., p. 47, 1910 (reference).

Rediogobius sternbergi Herre, Gobies of Philippines, p. 98, 1927 (copied). Royas and Martin, Depart. Agric. Comm. Manila, Techn. Bull. 6, p. 237, 1937 (reference).

Depth 3 7/8 to 4; head 3 to 3 1/4. Snout 4 1/2 to 4 3/5 in head; eye 3 1/3 to 3 1/2, greater than snout or interorbital; maxillary reaches 1/4 in eye, length 3 in head, mouth small, little inclined, begins in front nearly level with lower eye edge; upper teeth triserial, outer row little enlarged, lower in band with some little enlarged; interorbital 2 in eye, low, with eyes elevated though not quite impinging on upper profile of head.

Scales 26 to 28 in lateral series; 8 or 9 transversely between front of second dorsal and anal; 1/2 predorsal ~~not quite~~ forward to eye, also preopercle, cheek and opercle scaly. Small scales on pectoral, chest and breast. Scales little larger posteriorly on caudal peduncle, cycloid on predorsal, back and anteriorly,

ctenoid posteriorly.

D. V — 8, first spine 2 1/3 in head, first ray 2 1/4, seventh ray 1 4/5; A. 8, first ray 3, seventh ray 2; caudal 1 1/6, rounded, median rays longest; least depth of caudal peduncle 2 1/3; pectoral 1 1/6, rays 20; ventral rays I, 5; fin 1 2/5 in head.

Brown above, paler below; whitish on under surfaces. Sides with 11 or 12 short, variable, vertical blackish blotches, with first above pectoral origin more or less conspicuous. Muzzle terminally dark gray. Diffuse dark gray blotch on opericle. First dorsal dark gray terminally, pale basally. Second dorsal with obscure dark gray stripes. Anal and caudal dark gray. Paired

fins pale.

Philippines. Characterized chiefly by its coloration, especially the dozen dark vertial series of median lateral blotches, with first over pectoral base conspicuous.

U. S. N. M., no. 50536. Lake Buhi, Philippines. July 5, 1901. Dr. F. W. Richardson. Length 20 to 27 mm. Type and 5 habitat types.

Genus Gobiella H. M. Smith

Gobiella H. M. Smith, Proc. U. S. Nat. Mus., vol. 79, art. 7, p. 33, 1931. (Type Gobiella pellucida H. M. Smith, monotypic.)

Body elongate, compressed. Head very slightly compressed. Snout much shorter than eye. Eye advanced, in front half of head, large. Mouth very oblique, lower jaw prominent. Minute teeth in bands in each jaw. Scales 25 in axial lateral series, absent from body anterior to first dorsal fin. Head naked. Dorsal fins widely separated, first with 5 spines, second with 9 rays. Anal rays 12. Caudal truncate. Pectoral without free silk like rays. Ventrals united.

minute gobies of Siam and
Malaya, likely often overlooked
due largely to their invisibility
in the water and small size,
though evidently abundant
where found. F

~~Analysis of species~~

Gobiella pellucida H. M. Smith

Gobiella pellucida H. M. Smith, Proc. U. S. Nat. Mus., vol. 79, art. 7, p. 33, 1931 (type locality, Bangkok, Siam). — Suvatti, Index Fish. Siam, p. 157, 1937 (reference). — Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 89, p. 248, May 19, 1937 (Bangkok).

Depth 3 3/4 to 4; head 3 1/8 to 3 1/4. Snout 6 to 6 1/2 in head in profile from snout tip; eye 3 7/8 to 4, greatly exceeds snout; maxillary reaches below first third of snout, length 2 2/5 to 2 1/2 in head from snout tip; mouth subvertical, begins in front nearly level with middle of eye, lower jaw protruding; teeth very minute, in band in each jaw; interorbital low, eye not entering upper profile of head.

Head and anterior part of trunk, including predorsal, chest, breast and prepectoral region naked. Scales begin below first dorsal, large, feebly ctenoid, in 6 rows below origin of second dorsal counted transversely.

D. V — I, 8, first spine 3 in total head, first branched ray 1 2/5; A. I, 10 or 11, first branched ray 1 1/2 to 1 2/3; caudal 1 1/4, hind edge truncate; least depth of caudal peduncle 3 2/5 to 3 1/2; pectoral 1 2/5; ventral 2. Anal papilla 1/2 of eye.

Pale or light translucent brown. Scattered variably dark melanophores on sides of abdomen and above vent, also row of minute ones along anal base. Fins pale.

Siam.

U. S. N. M., no. 90313. Bangkok, Siam. March 14, 1927. Dr. H. M. Smith. Length 10 to 23 mm. Thirty-five examples. "Cotypes."

U. S. N. M., no. 90314. Bangkok, Dr. H. M. Smith. Siam. February 16, 1927. Length ~~11~~ 18 to ~~21~~ mm. Ninety-two examples. "Cotypes."

U. S. N. P., no. . Bangkok. 1926. R. M. de Schauensee. Length 18 to 23 mm. Seventy examples.

Gobiella boitwistle Herre

Gobiella boitwistle Herre, Bull. Raffles Mus., No. 9, p. 85, Dec., 1934 (type locality, Singapore Island).

Herre and Myers, Bull. Raffles Mus., No. 13, p. 45, Aug. 1937 (types).

Depth 3 4/5 to 4 1/3; head 3 3/5 to 4. Snout 4 to 6 in head; eye 4 to 4 1/3, usually greater than snout, subequal with interorbital; maxillary reaches below front part of eye or front margin of pupil; mouth greatly oblique; teeth curved backward, in single closely set row; tongue deeply emarginate, almost lunate.

Scales apparently 28 or 30 in longitudinal series. Scales invisible in life, only seen with difficulty in preserved specimens, and most evident on abdomen

and at second dorsal and anal bases.

D. V – I, 8 or 9, second spine 2 3/5- to 3 in head, second and third rays truncate, 1 7/8 to 2; A. – I, 10 to 12; caudal 4 to 5 1/10 in length; pectoral equals caudal; ventral 1 3/5 in head.

In alcohol or formaline specimens turn white and opaque at once, and fins become visible. Black specks form more or less evident band near base of second dorsal and anal, continuing as stripe or row to caudal base. Often band of black dots from below pectoral base along abdomen to anal. Few black specks on nape and often under side of head dotted, with black median line on anterior part of abdomen. (Herre.)

Singapore. Though said to differ from Gobiella pellucida Smith ~~Fish~~ "." in the second dorsal and

anal fins, in scalation, teeth, and other details". I am unable to satisfactorily contrast the material listed below.

U. S. N. M., no. 101,303. Singapore. March 14, 1934. A. W. C. T. Herre. Length 20 to 27 mm. Ten examples. "Cotypes" (= paratypes):

Genus Callogobius Bleeker

Callogobius Bleeker, Arch. Néerl. Sci. Nat. Harlem, vol. 9, p. 318, 1874. (Type Eleotris hasseltii Bleeker, orthotypic.)

Doryptena Snyder, Proc. U. S. Nat. Mus., vol. 35, p. 102, 1908 (1909). (Type Doryptena okinawae Snyder, orthotypic.)

Macgregorella Seale, Philippine Journ. Sci., vol. 4, No. 6, p. 533, Nov. 1909. (Type Macgregorella moroana Seale, orthotypic.)

Mucogobius Mc Culloch, Rec. West. Austral. Mus., vol. 1, p. 93, 1912. (Type Gobius mucosus Günther,

(not Gray 1842 in mammals)

Galera Herre, Gobies of Philippines, p. 103, 1927. (Type Galera producta Herre, orthotypic.)

Gunnamatta Whitley, Rec. Austral. Mus., vol. 16, p. 225, 1928. (Type Gunnamatta insolita Whitley, orthotypic.)

Herrea Whitley, Austral. Zoologist vol. 6, p. 123, 1930. (Type Galera producta Herre, virtually. Herrea Whitley proposed to replace Galera Herre.)

Metagobius Whitley, Austral. Zoologist, vol. 6, p. 122, 1930. (Type Eleotris relateri Steindachner, orthotypic.)

Batrachaeleotris Fowler, Proc. U. S. Nat. Mus., vol. , no. , p. , 1938. (Type Eleotris relateri Steindachner, orthotypic) (An exact synonym of Metagobius.)

Abtortiophagus Whitley. Records Austral. Mus., vol. 19, pt. 1, p. 90, Aug. 2, 1933. (Type Abtortiophagus humansi Whitley, orthotypic.)

Batracheleotris Fowler, Proc. U.S. Nat. Mus., vol. 85, No. 3032, p. 129, 1938. (Type Eleotris platieri Steindachner, orthotypic. An exact synonym of Metagobius.)

Body elongate, anteriorly subcylindrical, posteriorly compressed. Head depressed, broader than deep. Snout subequal with or longer than eye. Eye advanced, in front half of head, directed upward. Mouth small, inclined, lower jaw prominent. Teeth in both jaws in several rows, outer of which enlarged, none canined. Tongue rounded anteriorly, sometimes very slightly notched in median line. Bony interorbital narrow, 1/2 to equal to eye diameter. Front nostril in long tube. Gill openings moderate, long as basal pectoral width. Isthmus broad. Branchiostegals 5. Inner edge of shoulder girdle with fleshy flaps. Scales 25 to 50 in axial lateral series, somewhat irregular, cycloid

wholly or anteriorly, then ctenoid posteriorly. Breast and belly scaled. Head scaled above behind eyes. Preopercle and upper half of opercle covered with small cycloid scales, or naked. Head with cutanian papillae, and transverse and longitudinal ridges. Dorsal fins separate, first with 6 spines, second with 8 to 12 rays. Anal rays 8 to 10. Caudal lanceolate, oblong. Pectoral without free silk like rays, base scaled. Ventral with basal membrane very weakly or not developed, bases united, membrane between inner rays very weakly developed and often torn.

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Callogobius koumansi (Whitley)

Abtortiophagus koumansi Whitley, Records Austral. Mus., vol. 19, pt. 1, p. 90, pl. 11, fig. 3, Aug. 2, 1933 (type ~~Type Abtortiophagus koumansi Whitley, holotype.~~ locality, Hayman Island, Queensland).

Callogobius ocellatus Herre, Field Mus. Publ., no. ~~[illegible]~~, Zool. ser. vol. 18, no. 12, p. 422, Feb. 15, 1935 (type locality, Dvalau Island, Fiji); no. 353, Zool. ser. vol. 21, p. 362, fig. 32, April 15, 1936 (type).

Callogobius liolepis Koumans

Callogobius liolepis (Bleeker) Koumans, Zool. Mededel. Rijks Mus. Nat. Hist. Leiden, deel 15, afl. 1-2, p. 14, 1932 (type locality, Ambon); Prelim. Rev. Gobioid Fish., p. 75, 1931 (name only).

Analysis of Species

a.' Snout well less than postocular length of head.

b.' Gallogobius. Ventrals with connecting membrane entire their whole length.

c.' Scales 28 in lateral series; second dorsal I, 7. centrolepis

c.² Scales 40 to 50 in lateral series; second dorsal I, 10 or 11. hasseltii

b.² Ventral membrane divided nearly to bases of fins.

d.' Metagobius. Scales 37 in lateral series; second dorsal I, 12; anal I, 7. sclateri

d.² Herrea. Scales 60 to 70 in lateral series; second dorsal rays I, 12; anal rays I, 11 or 12. tanegasimal

a.² Macgregorella. Snout long as postocular length; scales 48 to 50 in lateral series; second dorsal rays I, 10; anal rays I, 8. moroana

Callogobius centrolepis Weber

Callogobius centrolepis Weber, Notes Leyden Mus., vol. 31, p. 157, 1909 (type locality, South of Tandjong Lajar, Bawean); Siboga Exped., vol. 32, Fische, p. 481, fig. 99, 1913 (type).

Depth 4 3/4; head 2 7/8, width 1 1/5? Snout 4 1/5 in head from snout tip; eye 4 1/8, subequal with snout; maxillary reaches opposite front eye edge; length 3 1/2 in head from snout tip; mouth cleft oblique, begins little below level of lower eye edge, mandible protruding in front; teeth small, in numerous rows in jaws, in ~~upper jaw~~ front row 10 or 12 enlarged; interorbital low.

Scales 26 + 2 in lateral series; 8 between dorsal and anal transversely; 10 to 12 predorsal forward

to eye. Scales ctenoid only on hind part of tail and trunk, anteriorly on trunk and head scales cycloid,.

D. VI — I, 7, third spine 3 in total ≡ head length, second ray 2 1/6; A. I, 7, second ray 2 4/5, sixth ray ≡ 1 3/4; caudal 1 2/7, attenuated behind, with median rays little longest; least depth of caudal peduncle 2 1/5; pectoral 1 1/3; ventral 1 2/3.

Brown, scales all with darker edges. Fins darker than body, mostly with obscure still darker bands.

Length 49 mm. (Weber.)

East Indies.

Callogobius hasseltii (Bleeker)

Eleotris hasseltii Bleeker, Nat. Tijds. Ned. Indie, vol. 1, p. 253, 1850 (type locality, Cinjer, West Java); Verh. Batavia. Genoot. (Blenn. Gob.), vol. 22, p. 253, fig. 13, 1849 (type); Nat. Tijds. Ned. Indie, vol. 2, p. (385-412, 1856 (Kajeli, Buru). — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 116, 1861 (copied).

— Károli, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 167 (1882) (Ceylon).

Ophiorrhinus nudiceps Ogilby, Proc. Linn. Soc. New South Wales, vol. 21, p. 748, 1897.

Elaeotriodes hasseltii Bleeker, Nat. Tijds. Ned. Indie, vol. 14, pp. 465, 1857 (reference); Ned. Tijds. Dierk., vol. 2, p. 150, 1865 (Bowlo).

Valenciennea hasseltii Bleeker, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 2, p. 275, 1868 (Obi).

Valenciennea hasselti Bleeker, op. cit., ser. 2, vol. 2, p. 300, 1868 (Waigiu).

Callogobius Lasseltii Weber, Siboga Expedition, vol. 57, Fische, p. 480, fig. 98, 1913 (Lombok; Great Sangir; Sula-Besi; Saleyer; Banda). — Jordan and Seale, Bull. Bur. Fish., vol. 25, pt. 1, p. 277, fig. 98, 1906 (Jolo). — Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 23, p. 875, 1901 (Misaki). — Jordan and Thompson, Publ. Carnegie Inst., no. 218, p. 313, 1914 (Misaki). — Jordan and Richardson, Publ. Carnegie Inst., no. 363, p. 369, 1925 (Misaki). — Jordan and Hubbs, Mem. Carnegie Mus., vol. 12, no. 2, p. 172, 1925 (Misaki). — Jordan, Tanaka and Snyder, Journ. Coll. Sci. Imp. Univ. Tokyo, vol. 35, art. 1, p. 39, 1913 (Misaki). — Jordan and Starks, Proc. U. S. Nat. Mus., vol. 31, p. 387, fig. 1, 1906 (Misaki). — Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 45, p. 220, 1902 (Misaki). — Jordan and Metz, Bull. U. S. Bur. Fish., vol. 28, pt. 1, p. 1040, 1908 (Misaki). — Jordan and Seale, Bull. U. S. Bur. Fish., vol. 25, pt. 1, p. 277, fig. 98, 1906 (Jolo). — Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 23, p. 875, 1901 (Misaki). — Jordan and Thompson, Publ. Carnegie Inst., no. 218, p. 313, 1914 (Misaki). — Jordan and Richardson, Publ. Carnegie Inst., no. 363, p. 369, 1925 (Misaki). — Jordan, Tanaka and Snyder, Journ. Coll. Sci. Imp. Univ. Tokyo, vol. 35, art. 1, p. 39, 1913 (Misaki). — Jordan and Starks, Proc. U. S. Nat. Mus., vol. 31, p. 387, fig. 1, 1906 (Misaki). — Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 45, p. 220, 1902 (Misaki). — Jordan and Metz, Bull. U. S. Bur. Fish., vol. 28, pt. 1, p. 1040, 1908 (Misaki).

Gunida, vol. 9, pt. 4, p. 601, 1913 (Humboldt Bay). — Beaufort, Bijdr. Dierk., Amsterdam, vol. 19, p. 142, 1913 (Naoneka, Waigiu). — Weber, Siboga Exped., vol. 57, Fische, p. 480, fig. 98, 1913 (Lombok; Great Sangir; Sula-Besi; Saleyer; Banda). — Mc Culloch and Ogilby, Rec. Austral. Mus., vol. 12, no. 10, p. 217, July 14, 1919 (Masthead I., Cairns Reef and Cape Bedford, Queensland; New Hebrides). — Fowler, Mem. Bishop Mus., vol. 10, p. 408, 1928 (compiled).

— Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 172, July 7, 1925 (reference).

— Mc Culloch, Austral. Mus. Mem., no. 5, pt. 3, p. 377, Nov. 28, 1929 (reference).

— Fowler, op. cit., vol. 11, no. 6, p. 443, 1934 (New Hebrides).

— Kon

Callogobius hasselti (Tomiyama), Jap. Journ. Zool., vol. 7, no. 1, p. 83, 1936 (haha; Ouna-mura, Okinawa; Jaluit, Marshall Is.).

(Koumans), Zool. Meded. Rijks Mus. Nat. Hist. Leiden, p. 134, 1935 (type; Java).

Gobius mucosus Günther, Proc. Zool. Soc. London, p. 663, pl. 63, fig. A, 1871 (type locality, Adelaide). — Macleay, Proc. Linn. Soc. New South Wales, vol. 5, p. 609 (1881) (South Australia). — Waite, Rec. Austral. Mus., vol. 6, p. 200, 1906.

Lucogobius mucosus McCulloch, Rec. West. Austral. Mus., vol. 1, p. 93, 1912.

Callogobius mucosus McCulloch, Austral. Mus. Mem. no. 5, p. 3, fig. 377, Nov. 28, 1929 (reference).

Gobius depressus Ramsay and Ogilby, Proc. Linn. Soc. New South Wales, ser. 2, vol. 1, p. 4, (1886) 1887 (type locality, Botany and Clerk Reef, Port Jackson, New South Wales). — Ogilby, Cat. Fish. New South Wales, p. 35, 1886. — Waite, Mem. New South Wales Nat. Club, vol. 2, p. 46, 1904.

Callogobius hasselti var. mucosus McCulloch and Ogilby, Rec. Austral. Mus., vol. 12, no. 10, p. 217, pl. 32, fig. 4, July 14, 1919 (Port Jackson; Port Phillip; South Australia; South western Australia; type of Gobius depressus).

Gobius (Oxyurichthys) coelidotus Lanvage, Bull. Soc. Philomath. Paris, ser. 7, vol. 4, p. 50, 1880 (type locality, Java) (collection Kuhl and Van Hasselt).

Gobius coelidotes Weber, Siboga Exped., vol. 57, Fische, p. 489, 1913 (West Java).

Oxyptena okinawae Snyder, Proc. U. S. Nat. Mus., vol. 35, p. 103, 1909 (type locality, Naha, Okinawa); vol. 12, p. 513, pl. 67, fig. 2, 1912 (type).

Macgregorella intonsa Herre, Gobies of Philippines, p. 100, pl. 7, fig. 2, 1927 (type locality, near Naub on the south coast of Cotabato Province, Mindanao; San Jose); Fisher Herre 1931 Philippine Exped., p. 81, 1934 (Culion, Dumaguete).

Gobius coelidotes (Kuhl and Van Hasselt) Weber, Siboga Exped., vol. 57, Fishes, p. 480, 1913 (type locality, West Java (name in text).

Gunnamatta insolita Whitley, Rec. Austral. Mus., vol. 16, no. 4, p. 225, pl. 16, fig. 3, March 28, 1928 (type locality, Gunnamatta Bay, Port Hacking, New South Wales); Mac Culloch, Austral. Mus. Mem., no. 5, pt. 3, p. 372, Nov. 28, 1929 (reference).

Mucogobius gobiosoma Whitley, Australian Zoologist, vol. 6, p. 326, 1931 (on Callogobius hasselti var. mucosus Mac Culloch and Ogilby).

depth 5 2/3 to 6 3/4; head 3 2/3 to 4, width 1 2/5 to 1 1/2. Snout 3 1/2 to 4 in head from snout tip; eye 4 1/2 to 5, 1 1/4 to 1 1/2 in snout, greatly exceeds interorbital; maxillary reaches 1/2 to 3/4 to eye, length 3 3/4 to 4 in head from snout tip; mouth begins well ~~below level of~~ ^ below lower eye edge, ~~a little lower~~, mandible ~~well~~ protruded in front; teeth fine, pointed, small, in bands in jaws, of 3 or 4 series anteriorly, narrowing toward rictus, outer row slightly enlarged; interorbital narrow, less than half or more in eye, which impinges on upper profile of head. Lower gill rakers 7 or 8, lanceolate.

Scales 37 to 50 in lateral series; 15 to 17 transversely between second dorsal and anal; 14 to 16 predorsal. Head largely naked,

though scales of trunk may extend forward on predorsal nearly to eyes. Trunk, including breast and pectoral base with or without cycloid scales, becoming ctenoid and larger on tail. Head with elevated ridges or keels of papillae, usually as postocular and 2 parallel rows on cheek horizontal, besides bar on opercle below. From upper hind edge of preopercle line vertically down on front of opercle, besides 3 more lines on cheek and another more inclined posteriorly on opercle. On lower side of head, below preopercle edge, 6 parallel transverse short keels, besides others on each lower face of mandibular rami.

D. VI — I, 10 or I, 11, third spine 1 7/8 to 2 in total head length, first branched ray 1 7/8 to 2, penultimate ray 1 1/5 to 1 3/5; A. I, 8, first branched ray 2 +

to 3, penultimate ray 1 1/10 to 1 1/3; caudal 2 3/4 to 3 1/8 in rest of fish, lanceolate; least depth of caudal peduncle 2 to 2 1/4 in total head length; pectoral 3 3/5 to 3 2/3 in totall length without caudal, ray x 14 or 15; ventral ray x I, 5; length 1 1/4 to 1 2/5. Anal papilla usually long as eye.

Brown, each scale with darker edge, often each scale row with paler median or longitudinal streaks. Back with variable dark cloudings, or as saddles or blotches may be contrasted pale or dark, usually as one below first dorsal and 1 or 2 below second dorsal. Fins brown, often spines or rays with dark spots, which may form transverse bands on pectoral and caudal and more or less inclined to

longitudinal bands or other
fins. Sometimes dark transverse
bar or blotch at caudal
base.

Ceylon, East Indies, Philippines
Rui Kui, Australia, Melanesia,
Micronesia.

Nine
Eight examples. Nogas Point, Panay.
February 4, 1908. Length 29 to 55
mm.

One example. Batan, tide pool.
June 5, 1909. Length 65 mm.

Two examples. Batan, tide pool.
July 22, 1909. Length 50 to 62 mm.

These Batan materials differ
from the Nogas Point specimens
in having the fins more contrasted,
or with only 3 to 5 transverse
black blotches at most. In
the Nogas specimens all are finely
cross barred.

[1697.] Gubat Bay, tide pools.
June 23, 1909. Length 42 mm.

One example. Pilar Island.
September 12, 1909. Length 53 mm.

[1605.] Batan Island, tide pool.
June 5, 1909. Length 55 mm.

One example. Port Catanigan.
April 18, 1908. Length 53 mm.

One example. Pancol, Malampaya Island, Palawan, from creek at head of tidal. December 25, 1908. Length 65 mm.

One example. Pilar Island. September 12, 1909. Length 40 mm.

One example. Tataan, Tawi Tawi. Shore. February 20, 1908. Length 27 mm.

One example. Dumurug Point, Masbate. April 19, 1908. Length 55 mm.

One example. Tataan, Simalue Island. Shore capped. February 19, 1908. Length 46 mm.

Three examples. Mahinog, Camiguin Island. Tide pools. August 3, 1909. Length 34 to 48 mm.

U. S. N. M., no. 74558. Naha, Okinawa, Luchu Islands, Japan. Bureau of Fisheries. "Albatross Expedition 1906. Length 17 to 48 mm. Twenty-three examples. "Cotypes" of Dorypteria okinawae.

Greatly like McCulloch and Ogilby's figure of ~~Callogobius~~ ~~hasselti~~ (Bleeker). ~~Remarks. Apparently related to Callogobius hasselti var. fuscogus~~ It seems in general appearance to differ chiefly in the absence of scales from the head, the predorsal region, chest, breast and prepectoral region. Most examples also show a black spot on the upper part of the caudal, rarely absent, sometimes duplicated and again a less pronounced black spot may also be present on the lower part of the caudal. The presence of scales or their absence from the anterior part of the body is a variable character.

Callogobius

~~Gobiomorphus~~ sclateri (Steindachner)

Electris sclateri Steindachner, Sitzs. Ber. Akad. Wiss. Wien, vol. 80, pt. 1, f. 157, 1879 (1880) (type locality, Society Islands).

Gobiomorphus sclateri Jordan and Seale, Bull. Bur. Fisher., vol. 25, f. 384, fig. 73, 1905 (1906) (Apia; Pago Pago). — Herre, Fisher Herre 1931, Philippine Exped., f. 80, 1934 (Hitanbi). — Royas and Martin, Depart. Comm. Agric. Manila, Tech. Bull. 6, f. 220, 1937 (reference).

Calloqobius relateri McCulloch and Ogilby, Rec. Austral. Mus., vol. 12, no. 10, p. 219, pl. 32, fig. 3, July 14, 1919 (Two Isles, Queensland; McCulloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 172, July 7, 1925 (reference). Hebrides; Volcanos; Fiji). — Fowler, Mem. Bishop Mus., vol. 10, p. 408, 1928 (reference) — McCulloch, Austral. Mus. Mem., no. 5, pt. 3, p. 377, Nov. 28, 1929 (reference). (Upia). — Herre, Journ. Pan-Pac. Res. Inst., vol. 6, no. 4, p. 14, Oct. - Dec. 1931 (New Hebrides). — Fowler, Mem. Bishop Mus., vol. 11, no. 6, p. 443, 1934 (Suva; Hog Harbor, New Hebrides; Tulagi, Solomons). — Herre, Field Mus. Publ., Zool. Ser. vol. 21, no. 353, p. 362, April 15, 1936 (Suva; Dvalau; Bushman Bay, Malekula I.; Wala I.; Malo I.).

Batrachelcotris relateri Fowler, Proc. U. S. Nat. Mus., vol. 85, no. 3032, p. 130, 1938 (Great Tobea Island; Bataan Island; Camino I. near Daet; Subic Bay; Mahuroy; Manila; Guimaras; Tibi Tibi I.; Tomahu I.).

~~Gobiomorphus illotus Herre~~

Gobiomorphus illotus Herre, Gobies of Philippines, p. 45, pl. 3, fig. 4, 1927 (type locality, Polillo). — Roxas and Martin, depart. Agric. Comm. Manila, Tech. Bull. 6, p. 220, 1937 (reference).

depth 4 7/8 to 5 1/4; head 3 to 3 3/5, width 1 2/5 to 1 1/2. Snout 3 3/4 to 4 in head measured from snout tip; eye 3 4/5 to 4, subequal with snout, greatly exceeds interorbital; maxillary reaches eye, length 2 4/5 to 3 1/2 in head from snout tip; teeth simple, pointed, conic, close set, in narrow bands in jaws; interorbital low, narrow, half wide as eye. Gill slit lateral, restricted, equals mouth width.

Scales 33 + 4 in axial lateral series from supracapula; 15 transversely above anal origin, 16 to 19 predorsal forward opposite hind eye edge, 7 rows on cheek below eye. Muzzle, interorbital and branchiostegal region naked. Scales much smaller on chest, breast; prepectoral and predorsal regions, largest on tail and caudal peduncle. Scales with 24 to 32 radiating striae; apical denticles

large, uniserial, only on scales of tail; circuli coarse on anterior or small scales, larger scales with fine ~~to~~ circuli which obsolete apically.

D. VI — I, 10, I, spines flexible with third ½ in total head., first branched ray 1 7/8 to 2; A. I, 7, I, seventh ray 1 ~~1~~/4 to 1 4/5; least depth of caudal peduncle 2 1/5 to 2 1/4; pectoral 1 1/10 in total head to 3 in fish without caudal; caudal 1 1/8 in total head to 2 1/3 in rest of fish; ventral 1 1/8 to 1 1/3 in total head. Anal papilla 1 7/8 in eye.

Brown, paler to whitish on under surface of head and belly. Cheek or side of head below eye mottled with pearl white and russet or burnt umber. Warm brown band transversely from one pectoral base to the other, another darker and more contrasted band from base of spinous dorsal, two

from soft dorsal and one on side of caudal peduncle. Whole upper surfaces more or less mottled with pearly and deep brown. Iris gray with pearl and brown tints. Fins largely gray or white, spinous dorsal with blackish brown median blotch, two large ones on soft dorsal, and other fins with rather numerous blackish brown blotches. In small examples fins all more whitish, with blotches paler or brownish or forming several dark transverse bands on caudal and paired fins. Head usually with some small blackish brown specks or dots. Usually dark brown preorbital bar, which may be reflected across the mandible.

Philippines, East Indies: A very pleasing little fish, with attractive coloration.

Remarks. Compared with ~~Batrachoseleotris~~ ~~selateri~~ This species ~~differs at once in~~ its blackish fins, and the 3 blackish bands across the back. The ridges on the head are ~~small~~ developed and predorsal scales 9. Ventrals well separated, only united by a very low short basal membrane. Interorbital width about half of eye.

~~One example. Biri Channel. June 1, 1909. Length 25 mm. Type.~~

Two examples. Batan Island. Tide pools. June 5, 1909. Length 36 to 48 mm.

Five examples. Batan Island. Tide pools. July 22, 1909. Length 31 to 47 mm.

~~Five~~ examples. Biri Channel. June 1, 1909. Length 25 to 56 mm.

Four examples. Canimo Island, near dock. Tide pool. June 15, 1909. Length 37 to 51 mm.

Five examples. Gubat Bay. Tide pool. June 23, 1909. Length 33 to 47 mm. [1690].

Four examples. Mahinog, Camiguin Island. Tide pools. August 3, 1909. Length 35 to 44 mm.

Six examples. Iligan, Mindanao. Tide pools. August 1, 1909. Length 16 to 22 mm.

One example. Tinalue Bibiri Island. Tide pools. Sept. 23, 1909. Length 52 mm.

One example. Tomahu Island. December 12, 1909. Length 37 mm.

U. S. N. M., no. 51817. Apia, Samoa. Bureau of Fisheries. Length 18 to 33 mm. Seven examples.

U. S. N. M., no. 99033. Jubat Bay, tide pools. June 23, 1909. [1690.] Length 45 mm. Three others originally included belong to another genus and species.

One example. Tomahu Island, Dutch East Indies, tide pools. December 11, 1909. Length 58 mm.

U. S. N. M., no. 99046. Great Tobea Island, Dutch East Indies. December 15, 1909. Length 56 mm.

Callogobius tanegasimae (Snyder)

Gobiosoma tanegasimae Snyder, Proc. U. S. Nat. Mus., vol. 35, p. 104, 1908 (type locality, Tanegasima; Akune); vol. 42, p. 442, pl. 59, fig. 2, 1912 (type).

Callogobius tanegasimae Tomiyama, Jap. Journ. Zool., vol. 7, No. 11, p. 84, 1936 (Yakusima, Kagosima).

Galera producta Herre, Gobies of Philippines, p. 104, pl. 7, fig. 3, 1927 (type locality, Puerto Galera).

Herrea producta Royas and Quarter, Depart. Agric. Comm. Manila, Tech. Bull. 6, p. 237, 1937 (reference).

Depth 7 to 8; head 4 4/5 to 5, width 1 1/6 to 1 1/5. Snout 3 2/3 to 4 in head from snout tip; eye 3 7/8 to 4, subequal with snout; greatly exceeds interorbital; maxillary reaches 1/2 to 3/4 to eye, length 4 3/4 to 4 in head from snout tip; mouth cleft begins opposite to slightly below level of lower eye ledge, ~~length~~ lower jaw little protruded in front; teeth minute, triserial, outer row more widely spaced and little enlarged; interorbital narrow, over twice in eye, which impinging little on upper profile. Lower gill rakers 8, pointed.

Scales 60 to 70 in lateral series; 18 to 20 transversely between second dorsal and anal. Head, predorsal, chest,

breast, prepectoral region and pectoral axil naked. Scales on rest of trunks, and tail very small, minute, deeply embedded and cycloid. Head with conspicuous longitudinal and transverse ridges or keels of minute papillae, usually at postocular and 1 on cheek longitudinal, and 3 on cheek and 1 on operacle vertical.

D. VII I, 13 or I, 14, third spine 1 2/5 to 2 in total head length, first branched ray 1 3/4 to 1 4/5; A. I, 11 or I, 12, first branched ray 2 1/4 to 2 2/5, last ray 1 1/5 to 1 1/4; caudal 1/2 in rest of fish, lanceolate; least depth of caudal peduncle 2 3/4 to 2 4/5 in total head length; pectoral rays 1/5 2/5 2 2/3 to 3 1/2 in fish without caudal; ventral 1 to 1 1/5 in head. Anal papilla pointed, thin, 1/2 in eye.

Brown, each scale usually
with pale or white spot.
Dark brown blotch on back
below first dorsal, usually 2
more below second dorsal
and a fourth more or less
complete across caudal base.
Fins with 4 to 6 or more dark
spots on each ray or spine.

Philippines, Japan.

U. S. N. M., no. 71483. Akune, Satsuma, Japan. Bureau of Fisheries. Albatross Expedition 1906. Length 45 to 50 mm. Two examples.

U. S. N. M., no. 74557. Tanegashima Island, Japan. Bureau of Fisheries. Albatross Expedition 1906. Length 30 to 80 mm. Ten examples. Cotypes. [=Paratypes] of Goryptena tanegasimae.

U. S. N. M., no. 74795. Yawata-hama, Izo, Japan. Y. Watabe. Length 90 mm.

U. S. N. M., no. 67241. Tanegashima, Japan. Albatross Expedition 1906. Length 96 mm. Type of Goryptena tanegasimae.

Callogobius moroana (Veale)

Macgregorella moroana Veale, Philippine Journ. Sci., vol. 4, no. 6, p. 533, 1909 (type locality, Jolo, Jolo Island, Philippine Islands). — Herre, Gobies of Philippines, p. 102, pl. 28, fig. 1, 1927 (type; Odiongan); Fishes Herre 1931, Philippine Exped., p. 81, 1934 (Dumaguete, Sitankai). — Royas and Martin, Depart. Agric. Comm. Manila, Tech. Bull. 6, p. 236, 1937 (reference)

— Suvatti, Index Fish. Siam, p. 156 (Canth-aburi Estuary).

depth 5 1/2; head 3 1/2, width 1 1/4. Snout 2 1/2 (on figure, description gives 3) in head from snout tip; eye 5 3/4 (given 4 4/5 in description), 2 in snout, greatly exceeds interorbital; maxillary reaches 3/4 to eye, length 3 1/8 in head from snout tip; front of mouth begins eye diameter below lower eye edge, mandible protruding in front; lips fringed within; upper jaw with short outer row of few widely spaced, enlarged teeth, and 2 rows of minute teeth posterior, lower teeth triserial, pointed, slender, depressible, uniform; interorbital very narrow, 2 1/2 in eye.

Scales 48 to 50 in lateral series. Opercle and preopercle covered with embedded scales,

on upper hind angle of preopercle very small. Five vertical ridges of papillae on side of snout, below eye, 1 on opercle dozen below chin and beneath subopercle; those on cheeks pocketlike, those beneath head superficially resemble barbels; top of snout crossbarred by similar short ridges; short cross ridge behind each eye.

D. VI I I, 10, second spine 1 2/3 in ≡ total head length, second ray 1 7/8, ninth ray 1 1/3; A. I, 8, first branched ray 2 1/4, ≡ last ray 1 2/5; caudal 2 1/2 in rest of fish, lanceolate; least depth of caudal peduncle 2 4/7 in total head length; pectoral 3 1/5 in fish without caudal; ventral 1 1/4 in total head length. Anal papilla very slender, small, pointed.

In life yellowish white, marbled and mottled with brownish and grayish. 3 three irregular oblique dusky bands backward and downward, 1 from 1st spinous dorsal, ½ from soft dorsal, dusky streaks on side of head, 1 from snout to eye, another from eye to upper edge of opercle, another from hind eye edge obliquely backs, ½ others on lower sides of cheeks. Dorsal yellowish, with dusky blotch lower central and some other light shadings of dusky scattered over fin. Soft dorsal with 3 oblique dusky bars, middle most distinct, posterior tip of fin dusky. Caudal yellowish gray, with 3 dark triangular cross bands, middle one most distinct and hind tip of fin

dusky. ~~Caudal yellowish gray,~~
~~ventrals~~ Pectoral yellowish,
dusky irregular bar but on
upper half of fin. Ventral
pinkish, with slight dusky
blotches.

Length 54 mm. (Seale, Herre.)
Philippines. Herre states
"the distance from tip of snout
to posterior margin of eye
equal to postorbital length
of head" though the colored
figure by Nidera shows the
snout measured to the eye or
equal to the postocular length
as measured from the hind
edge of the eye.

Genus Mars Jordan and Seale

Mars Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 408, 1905 (type Mars strigilliceps Jordan and Seale, monotypic.

Body elongate, compressed. Head moderate. Snout little shorter than eye. Eyes advanced, in front half of head. Mouth oblique. Teeth in several rows, small, sharp pointed. Rather large blunt teeth on palatines and vomer. Scales 65 in axial lateral series. Head scaleless? Mucous canals radiating under eye, crossed by longitudinal ones. Dorsal fins separated, first with 6 spines, second with 11 rays. Anal rays 11. Caudal rounded. Ventrals united.

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Mars haydeni Herre

Mars haydeni Herre, Philippine Journ. Sci., vol. 59, no. 3, p. 363, pl. 2, fig. 6, march 1936 (type locality, Tide flats at Bais, Oriental Negros).

Analysis of Species

a.' Under surface of head and belly with 5 contrasted blackish bands transversely; 4 narrow gray cross bands on back. Strigiliceps

a.² Small pearly blue spots scattered over body; 7 dark transverse bands across back. caeruleo-maculatus

~~Mars caeruleo-functatus~~ maculatus Herre)

Mars caeruleo- ~~functatus~~ maculatus Herre, Copeia, No. 1, p. 22, April 3, 1933 (type locality, Jolo); ~~Philippine Exped., p. 87, 1934 (types — Rojas and Martin, Dept. Agric. Comm. Manila, Techn. Bull. 6, p. 235, 1937 (reference).~~

~~Mars caeruleo-functatus Herre, Fishes Herre 1931 (inadvertent new name!). Philippine Exped., p. 87, 1934 (types; op. cit. (reference). — Rojas and Martin, 3 1/5 to~~ 3 4/5 to

Depth 3; head 3 1/2. Snout 4 1/10 in head; eye 4 1/10; upper jaw with short outer row of caniniform teeth, posteriorly band of 3 or 4 rows of very small teeth; similar band in lower jaw and pair of small canines at outer angle of mandible; vomer with 2 large wide teeth, none on palatines; cheeks broad, bulging.

Scales 60 in lateral series, smallest anteriorly, and ceasing

above pectoral base, head and nape naked back to dorsal origin. Snout, top and sides of head criss-crossed by rows of sensory papillae.

D. VI — I, 10, fourth spine 1 1/3 in head, sixth ray 1 3/5; A. 9, sixth ray 1 3/5; least depth of caudal pedunicle 2 7/10; caudal rounded, 3 2/3 in length; large ventral extends nearly to anal, 1 1/5 in head, fragile frenum very thin and inconspicuous.

In alcohol olive brown all over, with 7 darker transverse bands across back and down sides where seeming to form longitudinal series of spots. Small pearl-blue spots scattered over body, most evident on posterior half. Head dappled with paler and darker brown mottlings. First dorsal may

have blackish stripe on upper half before second and succeeding spines, or spines may be marked by several rows of blackish spots. Soft dorsal with 3 rows of large oval dusky spots on its membrane. Anal and ventrals blackish, other fins pale.

Length 23 & 37 mm. (Fowler.)

Philippines.

Inara strigilliceps Jordan and Veale

Inara strigilliceps Jordan and Veale, Bull. Bur. Fisher., vol. 25, p. 408, fig. 95, 1905 (1906) (type locality, Apia, Samoa).

Cryptocentrus strigilliceps Fowler, mem. Bishop Mus., vol. 10, p. 414, 1928 (copied).

Depth 4 1/2; head 3 1/4. Snout 4 4/5 in head; eye 4 1/2, subequal with snout; maxillary reaches 1/2 in eye, length 2 4/5 in head from snout tip; mouth cleft oblique, begins in front well below level of lower eye edge, jaws equal; teeth in jaws pluriserial, small, pointed; rather large teeth, blunt, on vomer and palatines; tongue smooth; interorbital depressed eye impinging on upper profile of head.

Scales 65 in lateral series; 22 transversely between front of second dorsal and anal. Head, front of predorsal and prepectoral naked. Lines of fine papillae radiate from eye over and across cheeks, intersected on cheeks by 2 horizontal parallel rows; several longitudinal lines

on top of head behind eyes with transverse intersecting line.

D. VI—I, 10, third spine 1 1/10 in head, second branched ray 1 3/4; A. I, 9, first ray 3 1/10, ninth ray 1 1/2; caudal 1 2/5, convex behind; least depth of caudal peduncle 2 3/4; pectoral 1 1/4; rays 16; ventral rays I, 5, fin 1 1/3 in head.

Color in ~~life~~ alcohol darker brownish with 4 obscure lateral blotches. Under surface of head crossed by 5 transverse blackish bands alternating with gray. Five dark transverse bands across belly up to each lower side of abdomen. Dorsal gray, with 5 or 6 darker oblique bands, sloping down posteriorly. Several indistinct transverse dark bands on caudal and pectoral. Anal and ventral rather dark brown.

Polynesia. A well marked species, easily known by the dark transverse bands on the under surface of the head and belly.

U. S. N. Mus. [illegible] no. 51778. Apia, Samoa. Bureau of Fisheries. Length 50 mm. Type.

Genus Smilogobius Herre

Smilogobius Herre, Fishes Herre 1931 Philippine Exped., p. 88, 1934. (Type Smilogobius inexplicatus Herre, ~~designated~~ orthotypic.)

Body robust, laterally compressed. Head large. Snout convex. Eye moderate, elevated. Upper jaw with 3 or 4 rows of minute teeth and a short outer row of enlarged teeth, or 2 or 3 pairs of caniniform teeth, all more or less hidden by dense papillate fringe lining upper lip. Lower jaw with 3 to 5 rows of small teeth and may have pair of stout canines laterally. Vomer armed with 2 relatively enormous flat incisor-like teeth. Lips thick. Tongue free, tip rounded. Scales

Nmiliogobius cinctus Herre

Nmiliogobius cinctus Herre, Raffles Mus. Bull., No. 12, p. 12, pl. 9, May 1936 (type locality, Reef in Singapore Harbor).

Smilogobius singaporensis Herre

Smilogobius singaporensis Herre,
Bull. Raffles Mus., no. 12, p. 13, May
1936 (type locality, Reef in Singapore
Harbor).

70 to 85 in lateral series, cycloid. Body naked back to pectoral and ventral bases and dorsal origin, or few very small scales above opercle. Scales with longitudinally radiating ridges besides ordinary concentric structure of cycloid scales. Sides and top of head covered with lines of minute sensory papillae as in Mars. Caudal large, rounded. Ventrals with conspicuous frenum, from deep cup.

Said to differ from Mars in its peculiar cycloid scales, greater nakedness anteriorly, peculiar upper lip, and remarkable strong numerous teeth.

Analyses of species

a.[1] Depth 3 4/5 to 4 1/2; scales 70; interorbital width 2 2/3 in eye. inexplicatus

a.[2] Depth 5 1/5; scales 80 to 85; interorbital width 6 2/3 in eye. obliquus

Smilogobius inexplicatus Herre

Smilogobius inexplicatus Herre, Fishes Herre 1931 Philippine Exped., p. 88, 1934 (type locality, Sitanbi Reef). — Royas and Martin, Departm. Agric. Comm. Manila, Techn. Bull. 6, p. 238, 1937 (reference).

Depth 3 4/5 to 4 1/2; head 3 1/5 to 3 1/3, snout 3 1/3 in head; eye 4 1/4, greater than interorbital; jaws even; upper jaw with 3 rows of very small teeth and short outer row enlarged, lower jaw with 3 rows of small teeth, 2 large, flat, slightly divergent teeth on women; interorbital 2 2/3 in eye.

Scales 70 in lateral series.

D. VII — I, 10, third spine highest or 1 7/10 in head, penultimate ray

1 7/10; A. I, 9, penultimate ray
= 1 7/10; caudal 3 4/5 in body;
caudal peduncle little deeper
than long; depressed second
dorsal and anal reach caudal;
pectoral 4 3/4 in body; ventral
4 3/4.

Color in alcohol creamy yellowish,
with 8 broad bluish dusky cross
bands; first 2 short before
dorsal, next 2 under first
dorsal, rest under second dorsal;
first cross band under first
dorsal extends to belly, those
behind stop at middle of side;
cross band on nape continues
diagonally downward and forward
as double row of spots and bars
across cheeks; band just before
first dorsal continues as bar
or row of fused spots across
opercle. Two short bars extend
from eye to maxillary. Fins colorless
except first 3 dorsal spines, which tipped bluish dusky.
(Herre).

Length 41 to 57 mm.

East Indies.

Smilogobius obliquus Herre

Smilogobius obliquus Herre, Fishes Herre, 1931 Philippine Exped., p. 89, 1934 (type locality, Reef in Culion harbour). Royas and Martin, Departm. Agric. Comm. Manila, Techn. Bull. 6, p. 238, 1937 (reference).

Depth 5 1/5; head 3 1/4, depth equals width or 5 in length. Eye 4 in head, very prominent, equals snout, greatly exceeds interorbital; upper jaw with 3 or 4 rows of small teeth and 2 pairs of anterior canines, lower jaw with 4 or 5 rows of small teeth and pair of stout lateral canines; vomer with 2 large flat teeth apparently united by inner margins; very narrow interorbital 6 2/3 in eye.

Scales 80 to 85 in lateral series, cycloid.

D. VI – I. 10, spines all end in thread-like tips, third largest or 1 3/5 in head, middle and posterior rays highest - or 1 7/10; A. I, 10, trifle lower than second dorsal; caudal rounded, 3 3/7 in length; least depth of caudal peduncle 3 1/5 in head; pectoral 4 7/10 in body length; ventral 4 1/2.

Color in alcohol brownish gray above, nearly white beneath. Eight broad blackish cross bands, running diagonally downward and forward; first over top of head and down on hind edge of preopercle, second between pectorals last at caudal base. Few large circular brown spots on opercle and preopercle. extend from cross bands above. Two short brown bands from eye on snout. In some specimens cross bands form large dark spots on sides. Fins colorless. Spot on pectoral base.

Length 25 to 35 mm. (Herre.

Philippines.

Genus Vailima Jordan and Veale

Vailima Jordan and Veale, Bull. Bur. Fisher., vol. 25, p. 398, 1905. (Type Vailima stevensoni Jordan and Veale, monotypic.)

Body elongate, compressed. Head rather short, depressed, snout short, convex. Eye moderate, advanced or in front half of head. Maxillary extends below eye. Mouth small, subhorizontal. Lips broad. Row of small sharp-pointed teeth in jaws, with 2 small canines, none on palate. Upper part of snout and interorbital with broad concave groove, extends to first dorsal base. Scales large. Head scaly above. First dorsal with 6 spines, second dorsal with 10 rays. Anal rays 11. Caudal rounded. Pectoral rounded. Ventrals united, small.

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Vailima stevensoni Jordan and Veale

Vailima stevensoni Jordan and Veale, Bull. Bur. Fisher., vol. 25, f. 398, fig. 87, 1905 (1906) (type locality, Vaisegase River at Vaimoza, Samoa). — Kendall and Goldsborough, Mem. Mus. Comp. Zool., vol. 26, f. 319, 1911 (Tipaerui Valley, Papeete, Tahiti). — Fowler, Mem. Bishop Mus., vol. 11, no. 6, f. 443, 1934 (Samoa).

10, f. 411, 1928 (Papeete, Tahiti);

depth 5 1/4; head 4 4/5. snout 3 2/5 in head; eye 4, 1 1/5 in snout, 1 1/5 in interorbital; maxillary reaches 2/5 in eye, length 2 3/4 in head; mouth low, subinferior, snout tip protruded little in front; interorbital 3 1/5 in head, concave, eye impinging on upper profile of head. gill rakers very small.

Scales 34 in lateral series; 9 transversely. Head scaled above or on predorsal, sides naked.

D. VI — 10, third and fourth spines elongated and latter 3 3/4 in fish without caudal, second dorsal height 4 1/3; A. 11, fin height 4 2/3; caudal 3 1/2, convex behind; pectoral 4 1/10, rays 14; ventral rays I, 5, fin 1 1/2 in head.

In life olive green. Scales mottled golden and black.

Blackish lateral band from side of snout, below eye back to pectoral base, thence to caudal, on body interrupted, with 9 or 10 grayish blotches, ~~first~~ and on head tinged olive. First dorsal cherry red, spines with black spots. Second dorsal reddish, with dark checkers. Caudal yellow above, then median dash of cherry reddish, and lower half yellowish; all but upper edge closely reticulated, dark around pale spots. Anal dark. Pectoral yellow, checked with black. Ventral dirty yellow.

Polynesia.

U. S. N. M., no. 66074. Tipaerui Valley, Tahiti, Society Islands. April 29. 1899. Albatross Collection. Length 55 mm.

U. S. N. M., no 51775. Gasegase River, at Vaimoza, Samoa. 1902. Bureau of Fisheries. Length 50 mm. Type.

Genus Gobiopsis Steindachner

Gobiopsis Steindachner, Sitzs. Ber. Akad. Wiss. Wien, vol. 42, No. 23, p. 291, 1860. (Type Gobiopsis macrostomus Steindachner, monotypic.)

Genus Gobioides Lacepède

Gobioides Lacepède, Hist. Nat. Poiss.,
vol. 2, p. 580, 1798; vol. 4, p. 397, 1800.
(Type Gobioides broussonetii Lacepède.

Pleropodus Rafinesque, Analyse de la
nature, p. 87, 1815. (Type Gobioides
broussonetii Lacepède.

Ophichodes Swainson, Nat. Hist. Animals,
vol. 2, pp. 183, 278, 1839. (Type

Body elongate, anteriorly cylindrical, posteriorly compressed. Head depressed. Snout long as eye. Eyes advanced, in front half of head. Mouth little oblique, jaws subequal. Maxillary extends posteriorly to hind edge of preopercle. Teeth small, in several rows, outer enlarged, and outer row of mandible only extending to half of jaw, last teeth caniniform. Tongue emarginate. Bony interorbital about ½ diameter of eye. Gill openings little extended forward below. Isthmus moderate. Inner edge of shoulder girdle without fleshy flaps. Scales 28 to 33 in axial lateral series, ctenoid. Head scaled above behind eyes. Dorsal fins separated,

first with 6 spines, second with 7 to 11 rays. Pectoral without free silk like rays, base scaled. Ventrals united, oblong, under pectorals.

Gobiopsis macrostomus Steindachner

Gobiopsis macrostomus Steindachner, Sitzg. Ber. Akad. Wiss. Wien, vol. 42, No. 23, p. 291, pl. 1, fig. 6, 1860 (type locality, Bombay).

Gobius macrostomus (Hecbel) Steindachner, op. cit., p. 291 (name in synonymy).

Gobius macrostoma Günther, Cat. Fish. Brit. Mus., vol. 3, p. 548, 1861 (copied). — Day, Fishes of India, pt. 2, p. 786, 1876 (copied); Fauna British India, Fishes, vol. 2, p. 252, 1889.

Genus Eugnathogobius H. M. Smith

Eugnathogobius H. M. Smith, Proc. U. S. Nat. Mus., vol. 79, art. 7, p. 37, 1931. (Type Eugnathogobius microps H. M. Smith, monotypic.)

Body elongate, compressed. Head depressed. Snout 2 1/2 in eye. Eye advanced, in front half of head, covered with skin; mouth oblique, very large, lower jaw slightly projecting. Maxillary long, reaches within an eye diameter of lower angle of preopercle. Teeth in 2 or 3 rows in each jaw, outer row of lower jaw close set and larger. Tongue emarginate. Interorbital space twice eye diameter. Scales 29 in axial lateral series. Head naked.

dpercles, cheeks and jaws with prominent lines of pores. Dorsal fins separate, first with 5 spines, second with 8 rays. Anal rays 7. Caudal rounded. Pectoral without free sella like rays. Ventrals united.

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Eugnathogobius microps H. M. Smith

Eugnathogobius microps H. M. Smith, Proc. U. S. Nat. Mus., vol. 79, art. 7, p. 37, 1931 (type locality, Lower Bangpakong River, Central Siam). — Fig. 18. Suvatti, Index Fish. Siam, p. 157, 1936 (reference).

Depth 4 1/2; length little less than 3. Snout 4 1/2 in head, flat, broad; eye 1 2?, 2 1/2 in snout, 2 in interorbital, covered with skin; mouth very large, oblique, begins below level of lower eye edge, gape wide, lower jaw slightly projecting; maxillary long, extends back about 3/5 of total head length, or within an eye diameter of lower preopercle angle, length 1 2/5 in head from snout tip; teeth in 2 or 3 rows

in each jaw, - outer in lower jaw close set and larger; tongue broad, emarginate; interorbital 7 1/4 in head from snout tip, broad, flat.

Scales 29 in lateral series; 11 transversely below second dorsal. Head and bases of pectorals naked. Scales on body thin, ctenoid, uniform in size, completely covering body. Opercles, cheeks and jaws with prominent lines of pores.

D. V — I, 7, second spine 3 in total = head length, first branched dorsal ray 2 1/2; A. I, 6, first branched ray 2 3/4, last ray 2 1/10; caudal 1 1/2, convex behind, least depth of caudal peduncle 2 2/3; pectoral 1 1/4, rays 16; ventral 1 1/2, rays I, 5. Anal papilla long as eye.

Pale brownish yellow. Body with numerous, narrow, dark brown vertical lines corresponding

with hind edge of scales in transverse series. Fins uniform. Siam. Duly known from the type," obtained from a trammel net in the swift, tidal part of the Bangpakong River, where small gobies of both species and individuals abound in "

U. S. N. M., no. 90316. Lower Bangpakong River, Central Siam. July 1, 1923. Length 33 mm. Type.

Genus Pseudogobiopsis Koumans

Pseudogobiopsis Koumans, Zool. Meded. Rijks Mus. Nat. Hist. Leiden, p. 131, 1935. (Type Gobiopsis oligactes Bleeker, orthotypic.)

Body elongate, anteriorly cylindrical, posteriorly compressed. Head shorter than eye. Snout ~~a little~~ depressed or compressed. ~~long~~ than eye. Eye large. Maxillary prolonged posteriorly behind eye. Mouth a little oblique. Teeth small, in several rows, outer upper row little enlarged. Tongue emarginate to truncate. Interorbital less than eye diameter. Gill openings wide, extend forward below. Isthmus narrow. Inner edge of shoulder girdle without fleshy flaps. Scales ctenoid, 28 in lateral series, cover body. Head scaled

above and behind eyes and on opercle with large cycloid scales. First pre dorsal scale enlarged, median, close behind eye. Dorsal fins separated, first with 6 spines and second with spine and 6 or 7 rays. Caudal oblong. Pectoral without free rays. Ventrals united, under pectoral.

Pseudogobiopsis oligactis (Bleeker)

Gobiopsis oligactis Bleeker, Arch. Néerl. Sci. Nat. Harlem, vol. 10, p. 113, 1875 (type locality, Amboina). — Koumans, Prelim. Rev. Gobioid Fish., p. 67, 1931 (type seen).

Pseudogobiopsis oligactis Koumans, Zool. Meded. Rijks Mus. Nat. Hist. Leiden, p. 131, fig. 4 (head), 1935 (type; Bangpakong R., Siam). — Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 89, p. 251, May 19, 1937 (Bangkok).

Depth 4 to 4 1/5; head 3 1/4 to 3 2/5.
4 1/5 to 4 1/2 in head from snout tip
Snout ~~shorter than eye~~; eye 4 to
4 2/5 ~~in head~~, greater than inter-
orbital or snout; maxillary extends
1/2 to 1 eye diameter behind eye,
length 1 1/3 to 1 1/2 in head from
snout tip; mouth cleft little
inclined, begins in front level
with lower eye edge, lower jaw
slightly protruded in front;
teeth villiform, pluriserial,
bands in jaws narrowing poster-
orly, upper front outer row
little enlarged; tongue notched;
interorbital and top of head
depressed, eye just entering upper
profile of head.

Scales 27 or 28 in lateral
series; 7 or 8 transversely; 7 or 8
predorsal. Large cycloid scales
on predorsal, first especially
large and close behind eyes;
several large scales on opercle

and prepectoral region, also breast; all cycloid. Scales on trunk and tail ctenoid. Cheeks and muzzle naked.

D. VI–I, 6, first dorsal lower than body depth with first spine sometimes filiform; second dorsal like second dorsal higher than first; A. I, 6½; caudal elongate, rounded, rays I/8½; pectoral shorter than head; ventral rays I, 5, shorter than pectoral. Anal papilla small, slender. Brown, tinged with olive, paler below. Back with scale edges darker. First dorsal with dark terminal spot. Second dorsal and caudal with dark bands.

East Indies; Siam.

A.M.N.H. P., twelve examples. Bangkok, Siam. 1936. R. M. de Schauensee. Length 28 to 42 mm.

Pseudogobiopsis

~~Gobius~~ römeri (Weber)

Gobius römeri Weber, Abhandl. Senckenberg. Naturf. Gesell. Frankfurt, vol. 34, p. 39, fig. 8, 1913 (type locality, River Alama Bori at Sungei Manumbai, Wokam, Aru Islands; River Matora); Siboga Expedt., vol. 57, Fische, p. 459, 1913 (obi major). — Fowler, Mem. Bishop Mus., vol. 10, p. 403, 1928 (copied).

Pseudogobiopsis römeri Koumans, Zool. Meded. Rijks Mus. Nat. Hist. Leiden, p. 132, 1935 (type).

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Gobius macrognathos Herre

Vaimosa macrognathos Herre, Gobies of Philippines, p. 145, pl. 10, fig. 2, 1927 (type locality, Lake Naal, Batangas Province, Luzon; Mamboc River, Lake Bauyan, Mindoro; Bungau, Sulu Province; Philippine Journ. Sci., vol. 34, pp. 297, 303, 1927 (L. Naal; L. Bauyan); Fish. Herre Philippine Exped. 1931, p. 82 (1934) ( ).

Lungilogobius macrognathus Roxas and Martin, Departm. Agric. Comm. Manila, Techn. Bull. 6, p. 234, 1937 (reference).

Odontamaeromantis Kotshi

Odontamaeromantis Kotshi Stenne, Gobiidae of Philippines, p. 145, fig. 2, 1927 (type locality, Lake Taal, Batangas Province, Luzon; Imombo River, Lake Lanao, Mindoro; Bungaw, Cebu Province).

Depth 4 1/5 to 5; head 2 7/8 to 3 1/5. Snout 4 1/2 to 5 in head; eye 4 to 4 1/2, subequal to little greater than snout, greater than interorbital; maxillary extends half eye diameter behind eye, length 1 2/5 to 1 1/2 in head; mouth oblique, lower jaw ~~lower jaw~~ beginning in front nearly level with lower eye edge or but slightly below, ~~protrudes~~ and with indistinct knob in front; several rows of mostly small or minute upper teeth, outer row enlarged, in lower jaw similar

only both outer and inner rows little enlarged; tongue convex in front; interorbital low, about 1/2 of eye, which enters upper profile.

Scales 22 to 26 in lateral series; 7 or 8 transversely between second dorsal and anal, and 7 or 8 predorsal forward to eye, of which first or anterior large. Several large scales on opercle, head otherwise than noted naked, and scales on head and breast cycloid. Scales on trunk and tail ctenoid.

D. VI — I, 7, first spine of first dorsal elongate and filamentous, 1 to 1 1/3 in head, last branched ray 1 2/5 to 1 1/2; A. I, 6, last branched ray 1 1/2 to 1 3/4; caudal 1 1/8 to 1 1/5, little pointed medially behind; least depth of caudal peduncle 1 4/5 to

2 1/5; pectoral 1 2/5 to 1 1/2, rays 15 or 16; ventral rays I, 5; fin 1 1/2 to 1 3/5 in head. Anal papilla small.

Yellowish brown, with obscure dark cross bars on back. Head with 5 or 6 dark parallel transverse bands. Iris brownish. First dorsal with median horizontal and basal dark bands. Second dorsal with several dark longitudinal bands. Caudal with 5 dark transverse bands. Ventrals and anal usually dark terminally.

East Indies, Philippines.

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Two examples. Alimango River, Burias Island. March 5, 1909. Length 29 to 32 mm.

Six examples. Bacoor, Luzon. June 15, 1908. Length 33 to 40 mm.

Nine examples. Bagaong River, 4 miles from mouth, Nabblayan Bay, Mindoro. December 13, 1908. Length 33 to 41 mm.

Seven examples. Paluan River, Mindoro. December 11, 1908. Length 32 to 36 mm.

One example. Ragay River, Ragay Gulf, Luzon. March 10, 1909. Length 32 mm.

Seventeen examples. Malaga River, Leyte. July 30, 1909. Length 17 to 31 mm.

Genus Brachygobius Bleeker

Brachygobius Bleeker, Arch. Néerl. Sci. Nat. Harlem, vol. 9, p. 315, 1874. (Type Gobius doriae Günther, orthotypic.)

Hypogymnogobius Bleeker, op. cit., p. 318, 1874. (Type Gobius xanthozona Bleeker, orthotypic.)

Thaigobiella H. M. Smith, Proc. U. S. Nat. Mus., vol. 79, p. , 1931. (Type Thaigobiella sua H. M. Smith, orthotypic.)

Body elongate, subcylindrical anteriorly, compressed posteriorly. Head depressed. Snout moderate, about long as eye. Eye advanced, in front half of head. Mouth inclined, lower jaw little prominent. Teeth in both jaws in several rows, outer little enlarged, no canines. Tongue truncate. Interorbital equals eye. Gill opening long as basal pectoral width. Isthmus broad. Branchiostegals 5. No fleshy flaps on inner edge of shoulder girdle. Scales ~~with~~ 25 to 50 in laxial lateral series. Head naked, only operele with large ctenoid scales. Neck with longitudinal median groove, naked to base of first dorsal fin. Some curved longitudinal mucous canals under

eye, some on opercle and 1 along mandible to posterior margin of preopercle. An open pore in interorbital space, rest indistinct. Dorsal fins widely separated, first short with 6 spines, second and anal with 8 to 11 rays. Caudal rounded. Pectoral without free silk-like rays. Ventrals united, oblong, under pectorals.

Brachygobius doriae (Günther)

Gobius doriae Günther, Ann. Mag. Nat. Hist. London, ser. 4, vol. 1, p. 265, pl. 12, fig. A, 1868 (type locality, Sarawak, Borneo). — Martens, Preuss. Exped. Ost Asien, vol. 1, p. 391, 1876 (Pontianak).

Brachygobius doriae Hardenberg, Treubia, deel 15, afl. 3, p. 252, April 1936 (Kapuas R.; ~~south~~ Borneo).

Depth 3 2/3; head 3, broad, depressed, rather broader than deep. Snout broad, depressed, shorter than eye; eye 3 1/2 in head; mouth cleft reaches beyond front edge of eye; no canine teeth; interorbital flat, broad.

Scales 27 in lateral series; 10 transversely between second dorsal origin and anal origin. Only few scales on hind part of gill cover. Sides of head with several series of pores. Scales not serrated.

D. VI — I, 7; A. 8; fins low and short.

Brownish black, encircled by 3 broad yellowish bands; first round nape and opercle, second corresponds to space between 2 dorsal fins, - and third on caudal peduncle. Caudal fin yellowish, base deep black. (Günther.

Length 29 mm.

Brno.

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U. S. N. M., no. 94905. Malayan Region. R. Büttner. 1935. Length 25 mm.

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Brachygobius xanthozona (Bleeker)

Gobius xanthozona Bleeker, Verh. Batavia. Genoot. (Bl. Genn. Gobioid.), vol. 22, p. 34, 1849 (type locality, Surabaya); (Madura) vol. 22, p. 5, 1849 (Kammal); Act. Soc. Sci. Ind. Neerl., vol. 5, No. 6, p. 3, 1858-59 (Palembang, Sumatra); vol. 5, No. 7, p. 2, 1858-59 (Sinkawang, Borneo); (Acht. Sumatra), vol. 8, p. 42, Feb.-Aug. 1859 (reference).

— Martens, Preuss. Exped. Ost Asien, vol. 1, p. 392, 1876 (Pontianak).

Károli, Termesz. Füzetek, Budapest, vol. 5, p. 165, 1881 (1882) (Padang; Pantabug; Parawaka).

— Duncker, Mitteil. Naturh. Mus. Hamburg, vol. 21, p. 160, 1903 (1904) (Kuala Selangor).

— Günther, Cat. Fish. Brit. Mus., vol. 3, p. 66; 1861 (copied).

Brachygobius xanthozona

* Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 89, p. 248, figs. 263 to 278 (variation), 1837 (Bangkok, Siam; Medan, Sumatra); Lit. Cat. Fish. Malaya, p. 214, 1938 (Malaya).

Thaigobiella sua H. M. Smith, Proc. U. S. Nat. Mus., vol. 79, p. , fig. , 1931 (type locality, Bangkok). —— Suvatti, Indices Fish. Siam, p. 157, 1937 (reference).

(median)

depth 3 2/3 to 4 2/3; head 2 2/3 to 2 3/4, width 1 1/8 to 1 1/5. Snout 4 3/4 to 4 4/5 in head from snout tip; eye 3 1/2 to 4 1/8, little greater to subequal with snout, little greater to subequal with interorbital; maxillary reaches to front eye edge to 1/5 in eye, length 3 to 3 1/4 in head from snout tip; teeth minute, in narrow band in each jaw, interorbital 3 to 3 3/4, level.

Scales 26 in lateral series medially to caudal base; 9 or 10 between soft dorsal and anal origins. Opercles scaly, cheeks and predorsal naked. Row of fine papillae each side of snout, around suborbitals, along lower edges of mandible, along preopercle, 2 rows horizontally on cheeks, and oblique row over opercle. Scales with

Fig. 2 Lower jaw with 3 pairs of barbels at symphysis of mandible.

12 or 13 basal radiating flutings, 11 or 12 apical denticles, graduated shorter medially; circuli fine.

D. V—I, 8, third spine $2\frac{1}{2}$ to $2\frac{3}{4}$ in total head length, soft dorsal height $2\frac{1}{2}$ to $2\frac{2}{3}$; A. I, 8, fin height $2\frac{1}{3}$ to $2\frac{1}{2}$; caudal $1\frac{1}{8}$ to $1\frac{3}{4}$, convex behind; least depth of caudal peduncle 2 to $2\frac{1}{3}$; pectoral $1\frac{2}{3}$ to $1\frac{7}{8}$, rays I, 14; ventral I, 5, fin $1\frac{1}{2}$ to $1\frac{2}{3}$. Vent close before anal, with rather broad papilla.

Pale yellowish to whitish. Head more or less dotted with dark gray to blackish. Usually blackish transverse band on top of head behind eyes, sometimes extended down below eyes on cheeks. Broad black transverse band connects spinous dorsal with belly at postventral region, sometimes crossing to meet its fellow. Second broad black band connects last half of ~~dorsal~~ soft dorsal and anal. Third broad black band at caudal base.

A. M. V. P., no. ____ to ____.
Bangkok, Siam. R. M. de
Vchauensee. Length 10 to 28 mm.

A. M. V. P., no. ____.
Medan, Sumatra. March 1934.
R. M. de Vchauensee. Length ____ mm.

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Brachygobius xanthomelas Herre

and Myers

Brachygobius xanthomelas Herre and Myers, Bull. Raffles Mus., No. 13; p. 43, pl. 4, July, 1937 (type locality, Kawai district, Johore; Singapore).

Depth 3 1/8 to 3 2/3; head 2 4/5 to 3, width 1 1/5 to 1 1/4. Snout 4 1/2 to 4 3/4 in head (in profile) from snout tip; eye 3 1/6 to 3 3/5, greater than snout, 1 to 1 1/5 in interorbital; maxillary reaches about 1/3 in eye, length 3 1/10 in head from snout tip; mouth beg in little below level of lower eye edge, lower jaw protruding in front; upper teeth triserial, outer row little enlarged, apparently similar below; interorbital 3 1/5, laval. Scales 23 or 24 + 2 in lateral series; 11 or 12 transversely. Head,

predorsal, chest- and prepectoral region naked, rest of body with ctenoid scales.

D. VI – I, 7, fourth spine 2 1/2 in total head length, second ray 2 1/4; A. I, 7, second ray 2 1/4; caudal 1 1/4, convex behind; least depth of caudal peduncle 2 1/4; pectoral 1 1/2, rays 14; ventral rays I, 5, fin 1 2/3 in head. Anal papilla 1 1/3 in eye, conic, rounded.

In life clear yellow, with 5 or 6 black cross bands; first includes eye; second around trunk from predorsal and behind pectoral base; third from first dorsal; fourth from second dorsal to anal; fifth on caudal peduncle; sixth at caudal base. Basal half of each dorsal black. Pectoral with black basal blotch.

U. S. N. M., no. 101,238. Singapore Island, in brackish water. March 18, 1934. Dr. A. W. Herre. Length 15 to 18 mm. Paratypes. Five examples.

E. V. H. M., no. 101, 226. Hawaii district, Johore, 55 miles north of Singapore, March 22, 1934. Length 16 to 22 mm. Eight examples. Paratypes. Dr. A. W. Herre.

Genus Heteroplopomus Tomiyama

Heteroplopomus Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 58, 1936. (Type Rhinogobius barbatus Tomiyama, orthotypic.)

Distinguished by the presence of a pair of short spines, each little directed forward on lower inner edge of each mandibular ramus medially.

Heteroplopomus barbatus (Tomiyama)

Rhinogobius barbatus Tomiyama, Journ. Fac. Sci. Imp. Univ. Tokyo, vol. 3, pt. 3, p. 325, fig. 1, 1934 (type locality, Ariake Sound, Japan).

Heteroplopomus barbatus Tomiyama, Jap. Journ. Zool., vol. 7, no. 1, p. 58, fig. 13, 1936 (type; Hiroshima).

? Gobius baliuroides Bleeker, Verh. Batavia. Genoot. (Blenn. Gob.), vol. 22, p. 25, 1849 (type locality; Sumanap, Madura); (Madura), p. 5, 1849 (Sumanap).

Genus Cristatogobius Herre

Cristatogobius Herre, Gobies of Philippines, p. 170, 1927. (Type Cristatogobius lophius Herre, orthotypic.)

Snout shorter than eye.

Body elongate, compressed. Eyes advanced, in front half of head. Mouth nearly vertical, lower jaw prominent. Teeth in 4 rows in each jaw, - outer and inner row enlarged. Lower jaw with hind lateral pair of curved canines in outer row. Scales 28 to 30 in axial lateral series, ctenoid, smaller and cycloid on nape. Cheeks with longitudinal dermal crest. Three longitudinal mucous canals over preopercle. Head naked. Dorsal fins separate, first with 6 spines, second with 11 rays. Anal rays 11. Caudal pointed.

Cristatogobius lophius Herre

Cristatogobius lophius Herre, Gobies of Philippines, p. 170, pl. 13, fig. 1, 1927 (type locality, under the wharf at Bungaw, Lilio Province; San Jose). — Roxas and Martin, Depart. Agric. Comm. Manila, Tech. Bull. 6. p. 236, 1937 (reference).

Depth 4 2/5 to 4 1/2; head 3 1/2 to 3 2/3, much wider than body. Snout 4 3/5 to 5 in head; eye 3 2/5 to 3 1/2, subequal with or greater than snout; maxillary reaches below front eye edge to 1/3 in eye, length 2 1/4 in head from snout tip; mouth cleft begins opposite lower edge of pupil, mandible protruded in front; teeth quadriserial, enlarged in outer and inner row, with posterior pair of

large, lateral, recurved canines in outer mandibular row; interorbital very narrow, almost linear.

Scales 28 to 30 in lateral series; 10 transversely. Head naked. On nape thin, high, shinny crest, beginning between hind part of eyes and extends back almost to first dorsal origin, its height over half an eye diameter. Two widely separated rows of minute papillae crossing preopercle longitudinally and one running downward and backward on opercle. Sides of nape with very small cycloid scales or 7 or 10 before first dorsal and extend half way to eyes. Sides of body with rather loosely attached ctenoid scales. Four large pores in groove back from above eye to above opercle, 2 on hind preopercle edge.

D. VI — I, 10, second spine 1 3/4 in total head length, second ray 1 1/2 in head length. A. I, 10, second ray 2 1/8 in caudal 3 in rest of fish 3 in least depth of caudal peduncle 2 1/5 in total head length; pectoral 1, rays 17; ventral rays I, 5, fin 1 3/5 in total head length. Anal papilla slender, pointed, almost thread like.

In alcohol dark brown, with 5 or 6 paler cross bands on sides. On pectoral base 2 large black spots, and scattered thinly over sides of head and forward half of body black dots. Buccal cavity deep chocolate brown. First dorsal dark brown, with large blackish brown spot on posterior part beyond fifth spine. Other fins plain brown to blackish.

Length 22 to 36 mm. (Sterne.)

Philippines.

One example. Iloilo market, Panay Island. June 1, 1908. Length 54 mm. Without any of the dark spots shown in Here's figure.

Genus Lophogobius Gill

Lophogobius Gill, Proc. Acad. Nat. Sci. Philadelphia, p. 240, 1862. (Type Gobius crista-galli Valenciennes, [evidently intended though author of genotype not given] monotypic.)

Body elongate, compressed. Head compressed. Snout blunt. Eyes advanced, in front half of head. Mouth oblique, jaws subequal. Lips thick. Teeth in both jaws in several rows, outer little enlarged, no canines. Tongue rounded. Front nostril in short tube. Cheeks swollen. Bony interorbital width equals eye. Gill openings long as basal pectoral width. Isthmus broad. Inner edge of shoulder girdle without fleshy flaps. Scales 25 to 30 in longitudinal lateral series, ctenoid on

most parts of body, become more cycloid on nape, breast and belly. Head naked. Nape with fleshy naked crest, scales on nape begin from vertical from hind edge of preopercle. Mucous canals diverging under eye, short ones round eye, one on opercle, longitudinal one on preopercle and one along lower jaw to hind edge of preopercle. Open pores present, one median of hind nostril, one in interorbital space close before beginning of nuchal crest, one after each eye and some along upper and hind edges of preopercle. Dorsal fins separated, first with 6 spines, second and anal with 7 to 10 rays. Caudal rounded. Pectoral without

free, silk like rays. Ventrals
united, oblong, under pectorals.

Lophogobius chrysozoma Bleeker

Lophogobius chrysozoma Bleeker, Arch. Neerl. Sci. Nat. Harlem, vol. 10, p. 114, 1875 (type locality, Borneo; Amboina).

Depth 3 3/4 to 4; head 4 2/5 to 4 2/3, width 2. Snout less than twice eye diameter, obtuse; eye 3 in head, greatly exceeds interorbital; maxillary reaches 1/2 in eye; mouth little oblique, ~~oblique~~ in front below level of lower eye edge, jaws subequal; teeth in jaws acute, pluriserial, outer series conspicuous well spaced, ~~and~~ conic and enlarged, none canines; interorbital 3 in eye.

Scales 25 in lateral series;

7 transversely below second dorsal and anal; 1 predorsal. Head scaly on front and predorsal, sides naked. Trunk everywhere scaly, and on head and trunk ctenoid, subequal in size.

D. VI – I, 6 or 7, well spaced, median spines longest or twice in body depth, dorsal rays higher than body depth; A. I, 6 or 7, like second dorsal; caudal obtuse, convex, not or little longer than head; pectoral rays 17, without silky rays, obtuse, rounded, not shorter than head; ventral rays I, 5. little shorter than head, basal membrane elevated. Anal papilla compressed, broadly oblong, rounded.

Body immaculate golden-rose. Iris brown above, golden below. Head with 2 broad,

transverse diffuse brown bands, anterior ~~subocular~~ partly over eye, posterior over opercle and subopercle. Iris rosy. Dorsal dorsal with small black spot above middle. Second dorsal with 1 or 2 series of longitudinal brown spots.

Length 46 to 49 mm. (Bleeker.

East Indies. Bleeker says it is readily known by its golden rose color without black spots, the absence of membranous occipital ridge, and 7 rows of scales transversely on body. It is noteworthy for the upper scalation of the head, where the scales are larger than upon the nape, forming a large scale placed partly between the eyes and very much larger than those following. He also says he

has found no other indication of this scalation in the other species of Lophogobius, with the single exception of the figure by Pallas of Gobius cyprinoides, where the front and occiput are scaly as in Lophogobius chrysostoma.

Genus Oplopomus Valenciennes

(Ehrenberg)
Oplopomus = Valenciennes, Hist. Nat. Poiss., vol. 12, (50) p. 66, 1837. (Type Oplopomus pulcher (Ehrenberg) = Valenciennes = Gobius oplopomus Valenciennes, ↑ tautotypic. (Oplopoma Girard 1856 not involved.)

Hoplopomus Regan, Trans. Linn. Soc. London, vol. 12, p. 241, 1908. (Type Oplopomus pulcher, ↑ Valenciennes. (Ehrenberg) (Emendation.)

Centrogobius Bleeker, Arch. Néerl. Sci. Nat. Harlem, vol. 9, p. 321, 1874. (Type Gobius notacanthus Bleeker, orthotypic.)

rows of scales, and opercle scaly along upper edge. Mucous canal along lower jaw to hind edge of preopercle. Open pores around eyes, and along upper and hind edge of preopercle. Gill openings moderate, somewhat wider than width of pectoral base, isthmus moderate. Branchiostegals 5. Inner edge of shoulder girdle without fleshy flaps. Dorsal fins separate, first ray of both fins strong and bony, first fin with 6 spines, second fin with 9 to 11 rays. Anal rays 10 to 12. Caudal obtuse. Pectoral without free silk like rays, base scaly. Ventrals united, oblong, under pectorals.

Body elongate, compressed. Head compressed, obtuse. Snout obtuse, shorter than eye. Eye little advanced before middle of length of head. Mouth nearly horizontal, jaws subequal. Teeth in both jaws in several rows, outer row enlarged. In mandible outer row extends only half way in jaw, last teeth on each side canines. Tongue truncate. Nostrils not tubular. Eyes close together, bony interorbital less than half of eye. Preopercle with 1 or 2 short spines at lower end of hind edge. Scales 30 in axial lateral series, ctenoid, become cycloid on nape and breast; breast and belly scaly. Head scaled above behind eyes, preopercle with longitudinal

Oplopomus oplopomus (Valenciennes)

Gobius oplopomus Valenciennes, Hist. Nat. Poiss., vol. 12, p. (50) 66, 1837 (type locality, Massaua, Red Sea). — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 15, 1861, p. 476 (Red Sea). — Klunzinger, Verh. Zool. Bot. Gesell. Wien, vol. 21, 1871 (Red Sea). — (Gottfried) Bleeker, Journ. Mus. Godeffroy, vol. 6, pt. 11, p. 170, pl. 110, fig. 3, 1877 (Philippines; Macao; Tahiti; Maiao I.; New Hebrides).

Oplopomus oplopomus Herre, Gobies of Philippines, p. 166, pl. 29, fig. 3, 1927 (Pohilo; Cebu; Puerto Princesa; Balabac). — Roxas and Martin, Dep. Agric. Comm. Manila, Tech. Bull. 6, p. 225, 1936 (reference). — Fowler, Mem. Bishop Mus., vol. 10, p. 412, 1928 (Society Is.; Truk). — Jordan and Seale, Bull. Bur. Fisheries, vol. 25, p. 396, 1905 (1906) (reference). — Kendall and Goldsborough, Mem. Mus. Comp. Zool., vol. 26, p. 317, 1911 (Moen).

Aplopomus pulcher (Ehrenberg) Valenciennes, Hist. Nat. Poiss., vol. 12, p. (60) 66, 1837 (type locality, Massaua, Red Sea). — Hilgendorf, Symbol. Physicae, Semper. Ehrenberg, p. 9, pl. 9, fig. 6, 1899.

Gobius bitelatus Valenciennes, op. cit., p. (67) 89, 1837 (type locality, Red Sea). — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 35, 1861 (copied).

Gobius notacanthus Bleeker, Nat. Tijds. Ned. Indie, vol. 15, p. (201) 210, 1858 (type locality, Goram). — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 35, 1861 (copied). — Bleeker, Versl. Kon. Akad. Wet. Amsterdam, vol. 16, p. 368, 1864 (Ceram Sr.).

Aplopomus notacanthus Steindachner, Sitzs. Ber. Akad. Wiss. Wien, vol. 42, p. 290, pl. 1, fig. 2, 1860 (Philippines; Goram).

Genus Priolepis Valenciennes

Priolepes Valenciennes, Hist. Nat.
Poiss., vol. 12, f. 67, 1837. (Type

Depth 4 1/2 to 4 3/4; head 3 3/5 to 3 3/4, width 2 1/6 to 2 1/5. (789

Snout 3 3/4 to 4 in head from snout tip; eye 3 1/4, greater than snout, and greatly more than interorbital; mouth moderate, oblique, extends to front pupil edge; maxillary 2 1/4 to 2 2/5 in head from snout tip; teeth small, simple, conic, in 4 or 5 rows in jaws and outer row enlarged with last median lower alteral slightly enlarged curved canine; tongue broadly convex, entire in front; interorbital very narrow, 3/4 to 5 in eye, slightly concave; hind preopercle edge with denticle above angle, which somewhat as broad spine. Gill rakers 2+6, lanceolate, 1 1/5 in gill filaments, which 2 in eye.

Scales 26+4 in median lateral series; 7 transversely, 8 predorsal. Scales with 21 or 22 basal radiating striae; apical denticles 24 to 30--24 to 26; circuli fine.

D. VI — I, 10, i, first spine strong, robust, 2 2/5 to 2 2/3 in total head length, third apine 3 to 3 3/5 in fish without caudal, soft dorsal spine robust, strong, 2 2/5 to 2 3/4 in total head; A. I, 10, i, ninth ray 1 1/3 to 1 2/5; caudal pointed behind, 3 1/4 to 3 1/3 in rest of fish; least depth of caudal peduncle 2 1/6 to 2 2/3 in total head; pectoral 1 1/10 to 1 1/4; ventral 3 1/8 to 3 2/3 in fish without caudal.

Largely dull brown, whitish on under surface of head, breast and belly. Spinous dorsal marbled brown,filaments all dusky terminally. Scales on

body each with 1 or 2 round blue gray spots. Soft dorsal with blue gray spots in membranes crowded basally. Anal whitish, with median grayish longitudinal band. Blue gray spots on opercle and several similar bars on cheek, snout, pectoral base and each side of occiput. Pectorals and caudal pale. Ventrals brownish terminally.

Red Sea, East Indies, Philippines, China, Melanesia, Micronesia, Polynesia.

~~Seven~~ ~~Eight~~ examples. Cebu market, Cebu. March 28, 1909. Length 49 to 76 mm.

One example. Batangas, Batangas River, Luzon. June 7, 1908. Length 46 mm.

U. S. N. M., no. 65971. Truk, Caroline Islands, Micronesia. Albatross Collection. Length 58 mm.

Aplopomus vergens Jordan and Veale

Aplopomus vergens Jordan and Veale, Bull. Bur. Fisher., vol. 26, p. 44, fig. 17, 1906 (1907) (type locality, Cavite, Luzon). — Jordan and Richardson, Philippine Journ. Sci., p. 47, 1910 (reference). — Herre, Gobies of Philippines, p. 168, 1927 (Hamgbu; Iloilo; Inabanga). — Rojas and Martin, Depart. Agric. Comm. Manila, Tech. Bull. 6, p. 225, 1937 (reference).

Depth 4 1/8 to 4 1/5; head 3 1/2 to 3 4/5, width 1 1/2. Snout 4 1/2 in head from snout tip; eye 3 3/5 to 4, subequal with snout, greatly exceeds interorbital. Maxillary reaches 1/3 in eye, length 2 4/5 in head from snout tip; mouth little oblique, low, lower jaw slightly longer; upper teeth biserial, uniform, and lower in several series; interorbital low, 2 in eye, which enters upper profile of head.

Scales 32 or 33 in lateral series; 9 transversely, 12 or 13 predorsal nearly forward to eyes. Opercle above and cheeks scaly, also chest, breast and prepectoral.

D. $\frac{VI}{=}$ $\frac{I, 10}{=}$, fourth spine 1 1/2 in total head length, first ray 2 1/6, ninth ray 1 1/3; A. $\frac{I}{=}$, 10,

first ray 3, ninth ray 1 1/3;
caudal 1 to 1 1/10, convex behind;
least depth of caudal peduncle
2 to 2 1/8; pectoral 1 1/6 to 1 1/5,
rays 19; ventral rays I, 5,
fin 1 1/10 to 1 1/8 in total head
length. Anal papilla short,
1/3 of eye, pointed.

Brown, faler below. Along
median line of side 6 small
black spots, none larger than
eye, mostly appearing as
double, especially last at
middle of caudal base. On
back above, usually along each
row of scales, small ocellated
pale spots with one to each scale
and forming longitudinal series.
Usually or 6 or 7 dark saddles
down middle of back. First
dorsal with 2 longitudinal dark
lines, lower basal anteriorly.
Second dorsal with 2 dark

horizontal lines and a row of dark basal spots. Caudal with several transverse dark bars. Anal sometimes with dark gray tint. Ventral usually dark gray.

Philippines. A chubby little goby, usually distinguished by its coloration, especially the last yolked black blotch at the caudal base.

One example. Cebu market, Cebu. March 28, 1909. Length 39 mm. Though the preopercular spines absent the head shows scale pockets on the cheeks and doubtless was largely scaly.

One example. Siniloan Island. Tide pools. September 22, 1909. Length 23 mm.

One example. Zamboanga Canal, Zamboanga. October 8, 1909. Length 49 mm.

U. S. N. M., no. 53072. Cavite, Luzon, Philippines. Dr. G. A. Lung. Length 58 to 72 mm. "Cotypes" [Paratypes] of Oplopomus vergens Jordan and Seale.